NETWORK WORLD
THE WEEKLY FOR LEADING USERS OF COMMUNICATIONS PRODUCTS & SERVICES VOLUME 3, NUMBER 10 MAY 12, 1986

▶ STANDARDS

Token Ring tears TOP

BY BOB WALLACE
Senior Writer

SEATTLE — A rift between Ethernet and IBM Token-Ring Network factions within the Technical and Office Protocol (TOP) users group has forced users to decide whether token-ring local-area network technology should become part of the evolving TOP specification.

A subcommittee of the TOP users group said last week it has begun considering the possibility of adding the IEEE's 802.5 standard for token-passing ring networks as a second transmission media choice within a future release of the specification.

The issue is likely to be a hot topic at this week's Manufacturing Automation Protocol (MAP)/TOP users group meeting to be held here.

This action, initiated by the Physical Media subcommittee, was the result of a split in the TOP users

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▶ PRIVATE LINES

Tromping tariffs, part III

BY MICHAEL FAHEY
Staff Writer

Network users may be able to save money by taking advantage of differences between local and long-haul private-line tariffs. When combined with configuration options outlined in two previous articles (see Parts one and two, *Network World*, April 28 and May 5), analysts say it is possible for users to save up to 50% on some private-line networks.

Prior to AT&T's divestiture, interstate tariffs offered users the lowest rates. Now, however, intrastate service is often cheaper than state-to-state service. And, according to Zvi Kozicki, vice-president of development and technical services for Contel Network Management, users can configure their networks

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▶ FRONT-END PROCESSORS

NCR tackles IBM

Soon-to-debut NCR 5660 dwarfs IBM 3725.

BY PAUL KORZENIOWSKI
Senior Writer

ST. PAUL, Minn. — NCR Comten, Inc. will launch a frontal assault on its principal competitor, IBM. At a New York press conference scheduled for May 19, NCR is expected to unveil a front-end processor with storage and line capacities that dwarf those of IBM's 3725 front-end processor.

Although company officials would not comment on the announcement, *Network World* has gleaned product specifications from a vari-

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IBM and NCR Comten, Inc. Front-end processors

	Comten 3690	Comten 5660	IBM 3725
Number of hosts supported	8 attachable 8 concurrent	8 attachable 8 concurrent	8 attachable 6 concurrent
Number of lines	512	1,024	416
Maximum main storage	4M bytes	16M bytes	2M bytes
Price range	$85,000-$500,000	$400,000-$2 million	$75,000-$250,000

▶ E-MAIL SERVICES

Rock n' roll E-mail

Messaging for the rich and famous.

BY BOB WALLACE
Senior Writer

International Management Communications, Inc. has transformed an electronic mail system for the federal government into a solution for the

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As head of the International Communication and Information Policy Bureau, Ambassador Diana Lady Dougan mediates communications issues that impact us at home and abroad. Page 29.

NEWSPAPER

▶ OFFICE NETS

Disoss here to stay

Big Blue's blessing lures users.

BY PAUL KORZENIOWSKI
Senior Writer

Even though users are not completely satisfied with IBM's Distributed Office Support System (Disoss), many are taking steps to integrate the product into their networks.

The number of Disoss licenses, estimated at between 400 and 500, is fairly low. But IBM has made it clear that Disoss will play a key role in Big Blue's office automation strategy. Although users complain that Disoss swallows up processor resources and demands the use of a confusing array of applications, Big Blue's blessing has spurred most corporations at least to test the product. For some users, Disoss is evolving into a corporate standard.

"Because Disoss is a strategic product for IBM, the software becomes a strategic product for our company," noted a communications manager for a Boston-based company that served as a Disoss beta site before the product was an-

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▶ LOCAL NETS

Firm to demo Ethernet, Token-Ring net link

BY BOB WALLACE
Senior Writer

SCOTTS VALLEY, Calif. — Touch Communications, Inc. has developed software that allows users to connect an Ethernet-type local-area network to an IBM Token-Ring Network. The interconnect software will not be officially unveiled until late this summer, although the 14-month-old software company will demonstrate its capabilities at the Manufacturing Automation Protocol/Technical and Office Protocol (MAP/TOP) users group meeting to be held in Seattle this week.

Because the software would allow the large installed base of Ethernet local nets to be linked to the increasingly popular Token-Ring Networks, industry analysts claim the product holds much promise. But it may not be widely used until major vendors offer networking products compatible with the International Standards Organization's Open Systems Interconnect (OSI) reference model. The company claims the software is compatible with OSI Layers 2 through 7.

Patrick Gordon, data communications director for the Boston-based Yankee Group, said, "This is a product that customers of vendors planning to implement OSI protocols will want to look at if they are interested in the benefits of connecting to a token-ring net."

Touch Communications efforts to connect the dissimilar Ethernet and Token-Ring local-area networks will add steam to the TOP effort (see related story on page 1). TOP is an OSI-based set of evolving and established standards designed to allow diverse office equipment to communicate over a single network. For several years, Boeing Computer Services Co. has championed the development of a standard for office networks based on the OSI specification.

Promising start-up

A promising start-up, Touch Communications, with a staff of only 16, has received between $3.5 million and $4 million in venture capital funding. It is headed by Charlie Bass, co-founder of Ungermann-Bass, Inc., the largest vendor of broadband, local-area networks.

Brian McGann, co-founder of the company and vice-president of its research and development division, said the software's local net interconnection capabilities would allow devices such as personal computers and workstations attached

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▶ DEREGULATION

State efforts on the rise

BY MARGIE SEMILOF
Senior Writer

First of a three-part series.

Depending on the size of the user network and the state in which it is located, results of state-sponsored deregulation efforts may produce the biggest pricing alterations since the divestiture of AT&T.

Local deregulation of Bell operating companies has picked up steam in at least 12 states. The effect of state-sponsored deregulation legislation varies from state to state. But while bills passed in Illinois, Oregon, Iowa and Nebraska reflect local requirements, they share a common goal — to redesign state regulatory structures. Such state-sponsored BOC deregulation efforts are drawing emotional sparks from state regulatory agencies, especially in lower population areas. In Nebraska, the state's Public Service Commission (PSC) fears a lack of local carrier competition will drive local service rates so high that residential users will be unable to afford phone service. Regulators are also concerned that the cost of private lines for business users will soar.

Passage of a bill to deregulate Northwestern Bell services spawned heated debate between officials of the PSC and Northwestern Bell on the floor of the Nebraska legislature.

The bill, which is scheduled to take effect in January 1987, stands apart from other state deregulation efforts because it partially exempts both local and long-distance companies from state rate regulation.

It permits the local operating company to post new rates that can take effect within 60 days of filing. If the rate increase is less than 10%, subscribers have 60 days to gather enough petitioners to lodge a protest. The required number of petitioner signatures varies depending on the size of the local carrier raising its rates. For example, a greater number of signatures is required to protest a BOC rate hike than would be needed in the case of a smaller carrier's price increase. If the rate increase is more than 10%, the PSC must still review the request.

However, long-distance rates will continue to be averaged on a statewide basis until August 1991. Locally, the BOC may not de-average local toll rates, and intra-local access and transport area competition is prohibited until 1989. Using an averaged rate system, customers in urban areas pay the same for local service as customers in rural locations. De-averaging those rates would be a change to cost-based pricing of local phone service. Because it costs more to provide phone service to a rural town, those customers would have higher local phone rates.

Nebraska PSC Chairman Harold Simpson said while subscribers have 60 days to file a protest when a rate hike is filed, a hearing must be completed within 90 days from the rate hike filing. "If the [PSC] does not complete a hearing in that period of time," he said, "the rates are automatically put into effect without an appeal process."

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▶ LINKING LOCAL NETS

PC Net tied to TRW LAN

Allen-Bradley to supply link from IBM to broadband local net offering.

BY BOB WALLACE
Senior Writer

ANN ARBOR, Mich. — Allen-Bradley Co.'s Communications Division last week inked an OEM pact with TRW's Information Networks Division to provide TRW with an interface product that will allow IBM PC Networks to be linked to TRW, Inc.'s Concept 2000 broadband, local-area network.

The addition of the PC Network interface card to TRW's networking products line will allow users that have already installed IBM PC Networks to work with the coaxial cable-based Concept 2000. The Allen-Bradley interface cards can also be used in conjunction with the Concept 2000 net to hook multiple personal computers together using the Concept 2000's coaxial cable as the networking media.

Ed Snyder, information networks director for TRW, said the equipment agreement is valued at roughly $2 million. The pact calls for Allen-Bradley to provide TRW with several thousand Vistalan/PC interface cards during the next 14 months. The Allen-Bradley product was announced in late January.

"We are not trying to get into the personal computer networking business," Snyder asserted. "We are offering larger end users, who typically opt for a broadband backbone network in their facilities, the opportunity to tie together individual IBM PC Networks in their departments."

The Allen-Bradley card inserted in a TRW Server will allow an IBM PC Network to communicate with a host computer by using one of the communications channels on the broadband Concept 2000 local net. The TRW Server costs roughly $10,000, Snyder noted.

▶ PC ENHANCEMENT

IBM asynch link out

Micro mainframe file transfer

BY PAUL KORZENIOWSKI
Senior Writer

RYE BROOK, N.Y. — IBM last week introduced software that enables Personal Computer users to establish microcomputer-to-mainframe communications through the company's asynchronous control units.

IBM's PC/Host File Transfer and Terminal Emulation Program supports binary and text file transfers between an IBM Systems Network Architecture host running either IBM's MVS, VM or VSE operating systems and a Personal Computer attached to either an IBM 3708 Network Conversion Unit or an IBM 3710 Network Controller. These units act as protocol converters and format Ascii input so that it can be used on an IBM host.

Line parameters between the micro and the control unit can be set to support data transfers at speeds from 110 to 9.6K bit/sec. Among the other parameters that can be modified by users are full- or half-duplex mode, odd or even parity bits, one or two stop bits, automatic new line and scrolling.

> *"Users can reassign function keys."*

Whenever users transfer files, PC/Host File Transfer and Terminal Emulator Program monitors the progress of the transmission and supplies status messages. The product supports error-checking routines and automatic retransmission of a file whenever a transmission problem occurs.

The program can also enable a Personal Computer to mimic an IBM 3101 asynchronous terminal. With this emulation capability, a microcomputer can invoke the protocol enveloping mode of the 3708 or 3710 and communicate with an asynchronous application stored on an IBM host.

Also, a microcomputer can access another company's asynchronous host tied to an SNA network through either of the asynchronous control units.

In addition, PC/Host File Transfer and Terminal Emulaton Program supplies IBM 3270 series terminal emulation when the control units operate in protocol conversion mode. Users can reassign function keys so they match those used on the terminal line. Keyboard macros can also be stored so that users can press one key and invoke a specified series of commands.

A Personal Computer can be attached to either of the IBM asynchronous controllers by IBM's Personal Computer asynchronous communications adapter. Two logical units are supported for each connection.

PC/Host File Transfer and Terminal Emulation Program sells for $200 and runs on any model of the Personal Computer line equipped with 128K bytes of random access memory, IBM's PC-DOS operating system, Version 2.0 or higher, and a double-sided disk drive.

Is IBM planning a pre-ICA product blitz?

Analysts are speculating that, prior to the International Communications Association conference to be held in Atlanta, IBM will unveil a variety of communications products. The date seen as most likely for the product debuts is May 20 — less than two weeks before the ICA show officially gets under way on June 1.

What should users expect from IBM? Insiders say the following new products or enhancements are among the most likely introductions:

- The publicized 3274 Model 81C cluster controller. Among the features that may be incorporated in the 81C are support for 64 Systems Network Architecture logical units, asynchronous device support, an attachment for the Token-Ring Network and twisted-pair wiring.
- IBM 3275 front-end processor enhancements that could include 2M bytes of additional internal memory and new microcode that would speed system throughput and provide increased support for X.25 interfaces.
- A new front-end processor targeted to IBM's 4300 class mainframes.
- An IBM System/36 Token-Ring Network attachment that would enable the minicomputer to be directly connected to the local-area network.

▶ NONCOMPLIANCE 1

FCC fines firms

Move prompted by rival's complaint.

BY JIM BROWN
New Products Editor

WASHINGTON, D.C. — The Federal Communications Commission's Common Carrier Bureau recently fined four manufactuers of channel service units (CSU) for T-1 digital services for allegedly failing to comply with an interim telephone network interface specification.

The fines were ordered even though the final standard, which superceded the interim specification, was less stringent. The specification dictates pulse density requirements — the maximum number of consecutive zeros permitted in a digital bit stream.

The fines were sparked by a complaint filed by CSU manufacturer Verilink Corp. against competitors Tellabs Industries, Inc., Kentrox Industries, Larse Corp. and Digital Link Corp. Kentrox was fined $2,500; the others were fined $5,000. The firms have 30 days to appeal the FCC ruling.

In the complaint, Verilink alleged results from tests it performed showed the Tellabs T1 CSU Model 411, Kentrox T-Serve CSU, Larse T-CSU Model L551 and Digital T1-ISO CSU Model DL551A products did not adhere to an interim standard contained in FCC AT&T Technical Publication (PUB) 62411.

The FCC required manufacturers to submit affidavits certifying that their products met the standard while the FCC was reviewing a less stringent Bell operating company proposed standard. That new standard was implemented late last year. The FCC ruling said none of the four firms proved they met the interim standard, but gave Kentrox credit for requesting a waiver from PUB 62411 before it introduced a revised product meeting the then-proposed Part 68 standard.

Officials of three of the four firms said they plan to file with the FCC to have the fines overturned. The firms say their products meet the final standard adopted by the FCC and complained Verilink used the FCC's rules for anticompetitive reasons. A Verilink spokeman said the firm filed the complaint to maintain the integrity of T-1 networks.

A spokesman for Larse said the company was led to believe its product complied with PUB 62411 as a result of tests performed by an independent lab. "We thought we were okay," said Roger Olivier, Larse's vice-president of marketing. He said the firm expects to pass the next round of tests. Olivier said Verilink's action was a case of "the pot calling the kettle black," because Verilink's product did not meet the interim standard. Verilink's product was exempt from the interim standard because the company had units in service before it went into effect, according to the FCC.

An FCC spokesman confirmed Verilink's product was exempt from PUB 62411. Verilink did, however, meet standards requested by AT&T before the product was put on the market.

"They're playing a lawyer's game in order to gain market share," said Vinita Gutta, president of Digital Link. Her firm did not submit test results to counter Verilink's claims because it felt Verilink's complaint would be thrown out.

"We believe we're completely clean," said David Beckett, marketing director for Kentrox. "What we're spending on legal hassles is beyond the amount of the fine."

▶ NONCOMPLIANCE 2

FCC raps violators

Companies using uncertified computers could face fines, equipment confiscation.

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — The Federal Communications Commission last week released a list of 80 personal computer manufacturers in violation of the FCC's equipment registration requirements.

According to FCC rules, all computer equipment manufacturers must register their products with the FCC and demonstrate that the equipment does not emit excessive radio waves that could interfere with radio communications services, said Richard Engleman, chief of the FCC's Inspection and Investigation Branch.

Certified products will have a sticker on the back listing an FCC certification number. The widening crackdown on computers that fail to meet federal regulations impacts not only their manufacturers, but users as well. A corporation found to be using an uncertified computer could be fined or face confiscation of the device.

During the recent Comdex/Spring '86 conference in Atlanta, the FCC staged a raid aimed at bringing attention to the nonconformance problem. FCC agents affixed warning labels to computers that had not been certified by the agency. Some 200 products were cited as being in violation of the regulations and for having been illegally sold, said Jerry Freeman, head of the FCC's Field Office Bureau in Norfolk, Va. Earlier reports that as many as 2,500 computers had been tagged were greatly inflated, said Freeman.

Freeman said a user found to have an uncertified computer causing radio interference would first be notified of the violation by the FCC and given the opportunity to take the equipment out of service. If the company continued to use the computer, it could be fined up to $2,000 per day and risk confiscation of the equipment, Freeman said.

The FCC requires that before a firm begins marketing a computing device, it must first be tested by an independent laboratory to verify that its radio emissions are below federally mandated limits. The manufacturer must then file the test results with the FCC to receive a grant of certification.

High emission levels can interfere with aviational radio, two-way radio, paging systems, police, fire, emergency and military radio systems and television reception, Freeman said.

An overwhelming majority of the products on the recently released list come from small computer manufacturers based in California and Texas, according to Cecil Ellington of the Field Operations Bureau in Norfolk, Va. Firms such as PC's Limited, Intelligent Data Systems, Inc. and Kamerman Labs were among the cited offenders. The Norfolk bureau has issued $150,000 in fines since February.

"Most of the problems are not coming from the big computer manufacturers like IBM and AT&T. They're coming from small firms making IBM Personal Computer look-alikes," Ellington said. "With the incredible growth in the personal computer market, we're facing a growing spectrum pollution problem. The proliferation of personal computers increases the danger that an emergency radio message will be interrupted by a radio signal from a personal computer."

Any machine that falls within the definition of computing device is subject to the equipment registration rules, including smart modems, printers and keyboards. In addition, a growing number of low-cost computers are made of plastic and lack any sort of shielding that could contain the radio emissions.

Recent enforcement measures reflect the culmination of a six-year effort by the FCC. The current rules were developed in 1980, but because of industry protest, they did not become effective until 1983.

The National Aeronautics and Space Administration recently reported one of its terminals was emitting a high enough level of radio waves to interfere with its satellite tracking system. The irony is that the equipment had been certified by the FCC.

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▶ FURTHER RATE CUTS?

AT&T fingers local access overcharges

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — AT&T's proposed $1.5 billion rate cut could be deepened by an additional $250 million due to a calculation flaw used to determine the access charges AT&T pays local exchange carriers. The Federal Communications Commission has launched an investigation into recently restructured local exchange access tariffs, which are scheduled to go into effect June 1.

The FCC is exploring the methods used by the National Exchange Carriers Association (Neca) in determining access charges, which are the fees long-distance carriers pay local telephone companies for connections to local exchanges. In April, Neca proposed access charge reductions prompted by increased subscriber line charges.

The FCC's investigation was prompted by a petition submitted in late April by AT&T, but MCI Communications Corp., GTE Sprint Communications Corp., Western Union Corp. and a number of users groups also filed comments with the FCC on the access charge proposal.

AT&T contends long-haul carriers will be overcharged by the local exchange carriers by as much as $335 million between June 1 and January 1, 1987. If the FCC agrees and the access charges are reduced, AT&T and other carriers could pass the savings on to users in the form of lower long-distance rates.

The FCC has directed Neca to file new rates, according to Dan Grosh, assistant to the chief of the FCC's Tariff Division. Neca agreed that its rates should be resubmitted to reflect oversights in the original rate proposals. Those new rates were scheduled to be filed today, and interested parties must file comments by May 19 to meet the FCC June 1 approval date.

"The general methodology used by Neca is a reasonable basis for rate-making," Grosh said. "Neca support material also displays the steps used to develop the rates. However, our review indicated that certain assumptions on which the proposed rates were based are incorrect, while others are at least questionable."

The FCC spokesman went on to explain that Neca assumed proposed rate increases asked for by AT&T would reflect a 5% reduction in [Message Toll Service] and Wats usage. "In fact," he added, "the reductions were 9.5% and 11%." Neca used the 5% figure in determining its rates. The AT&T rate hikes involved evening and weekend discount rates for Message Toll Service and Wats.

Although Neca dropped its proposed usage rates in an April 1 rate filing and again in a proposed amendment, the FCC spokesman said the rates were still too high. The so-called common carrier line rates, which local companies charge long-haul carriers at each end of a standard long-distance call, were dropped from .0433 cents per min. per line to .0344 cents per min. per line in the April 1 proposal, and down to .032 cents per min. per line in the later filing.

The Neca rate reductions were made possible, in part, by the influx of new revenue realized by increasing monthly residential subscriber line charges from $1 to $2 and by increasing business line charges from $2 to $6.

Common carrier line rates are based on nationally pooled costs of local nontraffic-sensitive costs associated with maintaining the physical plant of the telephone companies. The rate is intended to recover non-traffic sensitive costs , also referred to as end-user common line charges.

▶ COMPUTER III

Final FCC ruling due?

Agency meets Thursday on proposal.

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — The Federal Communications Commission is expected this week to issue its final order on the proposed Third Computer Inquiry regulations.

Because the FCC is scheduled to consider Computer III in a meeting slated for Thursday, insiders say a final vote on the proceeding is likely.

Drafted in July 1985, Computer III was the regulatory agency's response to the rapid changes that occurred in the telecommunications industry since divestiture.

Most legal experts contacted last week said the final version of Computer III will incorporate substantive changes to the original proposal, primarily due to the volume of opposition to the first FCC draft. Observers feel the FCC will provide more direction to the industry on interpreting the new rules.

Computer III, if passed as originally proposed by the FCC, would establish a framework in which to judge the dominance a particular telecommunications firm enjoys in its business areas.

It appears certain that the FCC wants to eliminate the separate subsidiary requirement for carriers wishing to offer enhanced services. The FCC also wants telecommunications firms to establish an open architecture framework for the public network.

In its original notice of proposed rulemaking, the FCC was somewhat vague on what it meant by open architecture and observers expect the commission to clarify the definition.

Computer III is also expected to address the issue of comparably efficient interconnection, which involves the nature and quality of the interconnection services the dominant carriers must provide their competitors.

▶ MULTIVENDOR NETS

LU 6.2 to fly soon from Wang's wings

Mini maker to make good to users on LU 6.2 promises; sources say company has demonstrated to large customers a Wang/IBM interface slated for introduction in 30 days.

BY JOHN DIX
Senior Editor

LOWELL, Mass. — Wang Laboratories, Inc. has lagged behind its competition in supporting IBM's LU 6.2 network interface, but may make good on its year-old promise to back the specification within the next 30 days, industry sources said last week.

The minicomputer maker has been demonstrating to large customers an LU 6.2 interface to IBM's Distributed Office Support System, but has not committed to a product availability date, according to Jean Hazelwood, Wang's senior product manager of IBM networking products.

LU 6.2 is a high-level program interface and network operating system within IBM's Systems Network Architecture that has won strong industry support.

By requiring that vendors supply products that conform to LU 6.2, as some large corporations are doing ["Users force LU 6.2 issue," *Network World,* March 24], users are able to simplify the task of creating multivendor networks.

Wang will initially support LU 6.2 as a transport option for its Wang Office Disoss Gateway, according to Hazelwood. Today that gateway is based on a Wang transport product called Information Distribution Services. The Disoss gateway was announced in Brussels, Belgium, in 1985 and began shipping last month.

Wang also intends to use LU 6.2 for communications with micros and mainframes. The company will connect its Wang VS minicomputer to the IBM Token-Ring Network as a server and use LU 6.2 to communicate with IBM Personal Computers, Hazelwood said. Wang will also rely on LU 6.2 for application-to-application communications with mainframes.

Wang late with LU 6.2

While Wang is late to the LU 6.2 market compared with its two primary competitors, Digital Equipment Corp. and Data General Corp., the company may not unveil LU 6.2 within the predicted 30 days because it is still gun-shy about promising products it cannot deliver.

"There is a tremendous lack of confidence within the Wang customer base about the company's ability to deliver IBM interconnect products on time," said Eduardo Stecher, vice-president of marketing for Software Research Corp., a consulting and software development company in Natick, Mass. "When they deliver the products, they work. But the problem is, they are traditionally late."

Besides the LU 6.2-based Disoss gateway, Stecher believes Wang will support an LU 6.2 interface to IBM's CICS teleprocessing monitor. He also believes Wang's initial LU 6.2 release will lack support for PU 2.1, a complementary LU 6.2 specification that provides for communications between peer devices. Peer-to-peer communications is a new concept within SNA networks that have traditionally been hierarchical in design.

Without PU 2.1, Wang VS systems will have to go through a mainframe to communicate with smaller IBM systems, including the System/36, System/38 and Series/1. Although she would not divulge whether Wang would support PU 2.1, Hazelwood said the ability to talk to these systems is a less compelling requirement than host communications.

LU 6.2 plays a critical role in Wang's long-term strategy, according to Marty Gruhn, vice-president of the Sierra Group, Inc., an industry research firm that specializes in marketing strategies.

"Wang has to provide a cost-effective method to enable their medium-size host system to act as a logical node in an SNA Network," she said.

Wang's efforts are being driven by user demand. A division of General Electric Co., for example, has made LU 6.2 a procurement requirement for its office system suppliers. GE is one of Wang's largest customers.

"Some vendors can get away with hiding under a larger host like a DEC VAX, and let the VAX be an SNA node," Gruhn said. "But Wang is competing with DEC and can't afford to abdicate that position."

▶ MAJOR PBX ALIGNMENT

Fujitsu and GTE pair up

New company to develop and market PBXs in U.S.

BY SHARON SCULLY
Senior Editor

STAMFORD, Conn.— GTE Corp. and Fujitsu Ltd. last week signed a letter of intent to form a joint venture company that will develop and market a private branch exchange product line and related business communications systems in North America.

Majority ownership in the new company would be held by Fujitsu America, Inc., of San Jose, Calif. A definitive management and financial agreement is expected to be concluded by the end of this year, according to a spokesman for Fujitsu.

Not included in the agreement is Fujitsu's Focus PBX product line, which the companies said will continue to be marketed by Fujitsu Business Communications, formerly American Telecom, Inc.

The new company will take over manufacturing and marketing of the Omni S1, S2 and S3 PBXs, product lines from GTE Communications Systems' Business Systems Division.

Fujitsu America, which reported $500-million revenue in 1985, is involved in the manufacturing and marketing of fiber-optic transmission systems, digital multiplexers, microwave and satellite communications systems and high-speed data communications products.

The company supplies Bell operating companies, interexchange carriers and large end users. The company also manufactures and sells data processing products, electronic components and cellular mobile telephone products, as well as storage and peripheral products.

Asked if the joint venture would bring Fujitsu Ltd. products to the U.S. market, Fujitsu spokesman David Gould said the decision would be part of the negotiation process.

"It's our feeling that the most successful PBX suppliers are the ones strong enough to develop sophisticated systems that provide options for integrating voice and data networks," Gould said.

According to Jane Donohue, a spokeswoman for GTE, the Omni S5 will not be included in the Fujitsu joint venture. The Omni S5 is a PBX or premises-based configuration of the company's GTD5 digital central office switch. The Omni S5, along with GTE's digital central office line, is to be included in a joint venture with Siemens Communications Systems, Inc. in Boca Raton, Fla.

Observers say the Siemens venture, which is in the final stages of negotiation, is reportedly floundering and on the verge of being scrapped. It remained unclear last week how Siemens would view GTE's PBX alignment with Fujitsu. Spokesmen for Siemens were not available for comment at press time.

According to business and financial analysts, the move signals further retrenchment by GTE from increasingly competitive markets where it has not performed well. For Fujitsu — whose worldwide market share for large business systems parallels Digital Equipment Corp.'s — the venture continues recent expansion efforts in U.S. technology markets.

Fujitsu, which does not currently market a computer line in this country, owns a 49% interest in Amdahl Corp.

Kenneth Bosomworth, an analyst with International Resource Development, Inc. in Norwalk, Conn., said GTE's pending joint venture with Siemens is "more of the same," although it appears that deal may fall apart.

Bosomworth said GTE's joint ventures with Fujitsu and Siemens are signs the company is cutting back. "There are a couple very difficult years ahead as vendors adapt to ISDN standards. That's going to hugely depress the 1987 market for both central office and customer premises equipment. Everyone in those businesses is cutting back."

Fritz Ringling, an analyst with The Gartner Group, Inc. in Stamford, Conn., said he thought Fujitsu "wanted to buy market share, and they like the GTE telephone companies." From GTE's perspective, Ringling said, "It's clear now the company is going to concentrate on the business it can make money in, and that's the telephone companies. It's going to get out of markets where it is not a top player."

▶ ANNUAL MEETINGS

Nynex CEO sketchy on strategy

Address cites product centers acquisition, strong performance.

BY NADINE WANDZILAK
Staff Writer

BOSTON — In an address to stockholders during the company's second annual meeting last week, Delbert Staley, Nynex Corp. chairman and chief executive officer, touched on the company's efforts to thwart bypass of its public networks. However, he said little of substance with respect to the company's strategy for diversification into new business areas.

Staley did refer to the regional Bell operating company's recent acquisition of IBM's 81-store retail product chain ("Nynex buys 81 IBM Product Centers," *Network World*, April 28).

According to sources within New York Telephone Co., Staley postponed announcement of a virtual private network service the company introduced two weeks ago so as not to detract from announcement of the IBM acquisition that same week.

"We acquired not just 81 retail stores, but a distribution business," Staley said. "We're moving into 33 states to compete in the telecommunications equipment market.

"Through other acquisitions we've made, our proposed new chain of 100 Nynex Business Centers and our counseling ventures abroad, we will be a leading competitive player nationally and internationally," Staley said.

Facing competition in the form of local network bypass since the breakup of the Bell System, Nynex went to state and federal regulators with rate-making suggestions, Staley said.

Asked about competition among RBOCs and "Yellow Pages wars," Staley made it clear that the company welcomes competition. Southwestern Bell Corp. recently announced that it will offer a competing Yellow Pages directory in Nynex's territory. Staley said, "If Southwestern Bell can make it in New York, they're going to have to beat us." There is no winner yet, Staley said. "Their book is not out yet, and we do not know how many customers they have."

Nynex plans to offer Yellow Pages directories in New Jersey and Connecticut — the territories of Bell Atlantic Corp. and Southern New England Telephone Co., respectively.

As a result of the opportunities it has pursued, Nynex is financially stronger, Staley said.

In the first quarter of 1986, net income was up 15.2% compared with the first quarter of 1985. This is the second largest increase in quarterly net income since Nynex was founded. Nynex declared a two-for-one common stock split and an increase of 8.75% in its quarterly cash dividend.

"Since Nynex common stock began trading 30 months ago, its value has gone up more than twice as much as the Dow Jones Industrial Average for the same time period," Staley said.

▶ ANNUAL MEETINGS

MCI aims high

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — At its annual meeting here last week, MCI Communications Corp. showed off a high-speed, fiber-optic communications link, positive 1985 earnings and a new advertising campaign designed to woo large corporate customers.

With the conclusion of the equal-access battle, MCI has turned its attention to large corporate customers, MCI Chairman William G. McGowan told attendees. MCI has been enhancing its network with digital and fiber-optic capabilities and new services such as T-1, Datatransport, Prism, MCI Mail and Vnet that are designed to attract large corporate users, McGowan said.

In addition, he said, MCI's international presence and added satellite capabilities from its Satellite Business Systems (SBS) subsidiary will prove increasingly attractive to large and small businesses.

Addressing AT&T's recently announced price reductions, McGowan said MCI will maintain competitive rates. MCI's access costs will also decrease and this will be reflected in its rates, McGowan said.

As evidence of its effort to pursue the business market, MCI unveiled a 810M bit/sec, fiber-optic link that will initially run between Manhattan and White Plains, N.Y., but will eventually span the high-traffic corridors on the East and West Coasts.

The single-mode fiber can carry 12,000 simultaneous voice messages or the data equivalent. MCI is also deploying 45M bit/sec fiber links as part of its long-distance digital network.

The high-speed fiber link is being used by the company and will be made commercially available in the near future, according to a company spokesman. "The new fiber link will become part of the system which delivers MCI's advanced data services," McGowan noted.

At the meeting, company officials reported net income of $113 million for 1985 or 48 cents a share. The figures represent a 91% increase over the previous year's net income of $59 million or 25 cents per share. Revenue increased to $2.5 billion from $2 billion in 1984.

Revenue for the first quarter of this year was $819 million, compared with $571 million the year earlier. This reflects a 44% increase.

Earnings were $19.8 million or 8 cents per share, representing an earnings decline. The decrease was the result of one month's operation of SBS, which MCI acquired from IBM in February. Another factor was the issuance of 47 million shares of new MCI stock to IBM in exchange for SBS.

▶ VOICE AND DATA

ISDN alternative to debut

Lear Siegler system mixes digital voice, data channels.

BY MARY PETROSKY
West Coast Correspondent

ANAHEIM, Calif. — Lear Siegler, Inc.'s Electronic Instrumentation Division will soon introduce equipment that will enable telephone companies to pump three digital channels over copper wires that only support one voice channel today.

Southern Bell Telephone and Telegraph Co. has already performed a field test of the technology, dubbed VAD 9600 for its voice and data capabilities, and a contract is expected to follow, said Mark Priegel, product sales manager for digital systems with Lear Siegler.

VAD 9600 is also known internally as the Simultaneous Digital Voice and Data System.

VAD 9600 breaks a standard telephone line down into one 32K bit/sec digitized voice channel and two data channels, one operating at 19.2K bit/sec and the other at speeds up to 1200 bit/sec. The low-speed channel can be used for system maintenance as well as a variety of multiplexed services, including utility meter reading and security alarms.

The product offers capabilities promised by integrated services digital networks, Priegel said. "Our approach is to offer an interim solution," he said, adding that VAD 9600 is nearer to providing the capabilities envisoned with ISDN than to other interim solutions. One such solution is Pacific Bell's Project Victoria, which allows a single telephone line to carry two voice and five data transmissions simultaneously. Lear-Siegler has plans to make the VAD 9600 compatible with ISDN specifications as they become available, said Priegel.

An access technology, VAD 9600 provides a digital voice channel that uses adaptive differential pulse code modulation, and operates at 32K bit/sec. It also provides two data channels: one medium-speed channel, operating at up to 19.2K bit/sec, and a low-speed channel running at 1200 bit/sec. The low-speed channel can be used for system maintenance, as well as a variety of multiplexed services.

The VAD 9600 consists of two components. A multiplexer at the customer site multiplexes the three channels into a signal digital data stream and sends it over existing wiring. The signal is demultiplexed at a telephone company central office switch, and the individual channels are then routed to their destinations. VAD 9600 is compatible with digital loop carrier services as well as analog services, Priegel said.

Two other Bell operating companies have expressed interest in the VAD 9600, according to Priegel, but he declined to name the companies. One of these BOCs has already placed an order for field test equipment, Priegel said. In addition to the Bell operating companies, Priegel said a secondary market is large businesses that want to improve their own internal communications.

There is definitely a market for these early, ISDN-like capabilities, according to Chuck Kanupke, vice-president at Dataquest, Inc., in Malton, N.J. Early technologies such as VAD 9600 will be instrumental in testing user needs, in determining pricing issues and helping refine product designs

Kanupke sees VAD 9600 as Lear-Siegler's first crack at a product with three channels that are similar to the ISDN 2B+D interface. Although pricing for the VAD 9600 has not yet been announced, Priegel said it would be competitive with digital carrier loop services.

▶ AT&T UPDATE

Private line rates hiked

BY JOHN DIX
Senior Editor

BASKING RIDGE, N.J. — In yet another rate change, AT&T announced late last week that it has proposed revamping private line rates in order to recover $10 million it must pay to local exchange carriers under a new access charge plan.

The proposal came in response to access charge rates filed by the National Exchange Carriers Association (Neca) on May 1. The filing increased AT&T's cost of local special access facilities —dedicated lines needed for AT&T to provide end-to-end leased line services.

The impact of the new rate hike will depend on circuit configuration and result in increased rates for some, but decreased monthly bills for others.

The new rates are scheduled to go into effect on June 1, the same date AT&T's proposed rate cuts for AT&T Long-Distance, Wats, 800, Megacom, Megacom 800 and Software Defined Network service are scheduled to take effect.

The change in special access charges complemented the Neca access charge filing for AT&T switched services (see story on page 5).

▶ NETWORK USERS ASSOCIATION

NUA asks for role in COS, seeks user voice

BY MARGIE SEMILOF
Senior Writer

ALEXANDRIA, Va. — The Network Users Association (NUA) said recently it wants to represent collectively its roughly 100 member companies in the Corporation for Open Systems (COS). NUA has asked for admission to COS as an associate member. COS officials say a decision on NUA's request will not be handed down until September at the earliest.

"We support the stated intentions of COS," said Michael Harrop, president of NUA. "Our involvement will help coordinate user positions on standards and keep an eye on COS activities." Harrop said the cost of COS corporate memberships has kept NUA member companies from participating, although officials of NUA companies have stated they would like to be involved in COS activities.

According to COS President Vance Hall, COS bylaws provide for a nonpaying, nonvoting associate membership. The status exists to admit members that may contribute to COS activity in ways other than standards development research. Hall said the status of associate member was developed to allow government agencies and user associations such as NUA to participate. Hall said no group has been granted associate membership. But, "there are a lot of government agencies and organizations whose input we need," he said.

"The issue of which groups shall be granted associate membership is more complex than we had originally thought," Hall said. "We will study NUA's proposal for associate membership. Our final decision will not occur before our board meeting in September 1986."

The cost for COS membership is $25,000 per calendar year. Regular members, research members and senior research members are charged this membership fee. In addition to the membership fee, member companies must enter into research contracts with COS. The cost of those contracts ranges from $25,000 to $100,000 yearly, depending on the member's annual computer- and communications-related revenue. Those prices will increase after June 1.

▶ FIBER OPTICS

Technology promises glass gain

BY JOHN DIX
Senior Editor

While hair-thin glass fibers in today's telephone networks can carry nearly 6,000 voice conversations, a technology under development — dubbed coherent communications — promises to expand the transmission capacity of those same fibers as much as 2,000 fold.

Although great strides have been made in fiber optics in the last few years, the technology is still roughly equivalent to radio technology at the time of Marconi, said Nim Cheung, district manager of advanced lightwave technology at Bell Communications Research, Inc.

"Marconi only switched the radio beam on and off, and today we encode light by turning lasers or light emitting diodes on and off," Cheung said. Commercially available single-mode fiber-optic systems that use this direct detection signaling technique can transmit one information channel at 400M to 560M bit/sec.

With coherent communications, the same single-mode glass fibers will be able to carry between 1,000 and 2,000 400M-bit/sec channels, Cheung claimed. While still seven to 10 years away from commercial deployment, carriers that install glass fibers today will be able to upgrade to coherent technology by replacing the electronics used at both ends of a fiber. These terminals translate electrical signals into light on the sending side, and back to electrical signals on the receiving end.

"The capacity of the single-mode fiber we lay down today is there, but so far we are only tapping a small part of it," Cheung said. The ability to upgrade fiber transmission facilities without having to absorb the high cost of stringing new cables should result in the availability of low-cost, high-bandwidth services.

The advances made in capacity are not realized by increasing fiber transmission speeds, although high speed is a by-product. Fiber systems being tested in laboratories today are capable of transmitting at eight billion bit/sec. The highest bit rate demonstrated with coherent communications is one billion bit/sec. Although it is too early to guess the maximum attainable speed of coherent communications, Cheung said improvements in signal detection will eventually enable much higher speeds than direct detection systems.

Signal detection is improved by increasing the sensitivity of the receiver, allowing it to respond to weaker signals. Increased sensitivity will also limit the number of signal repeaters needed. In labs, the span achieved between repeaters for a 400M bit/sec direct detection system is 200 km. Only half of that distance can be realized in actual

See **Fiber** page 34

"You're filling a long-neglected information gap and doing it quite well."

Stan DeVaugn
Director
Corporate Communications
Network Equipment
Technologies

NETWORK
EQUIPMENT TECHNOLOGIES

April 4, 1986

Mr. Doug DeCarlo
Publisher
NETWORK WORLD
375 Cochituate
Framingham, MA 01701

Dear Doug:

Just a quick note to wish you and your staff well on your new editorial enterprise, and advise you that our current campaign is exceeding expectation. In fact, responses from Network World are better than "book number two" by a factor of eight-to-one.

You're filling a long-neglected information gap and doing it quite well. Keep up the good work.

Sincerely,

Stan DeVaughn
Director
Corporate Communications

SD:pl

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INDUSTRY UPDATE

"A very small percentage of the total long-distance minutes make for a lot of interesting arguments these days. You have to be a very large user to aggregate enough traffic to connect directly to a 4ESS long-distance node, if you assume prices are based on underlying costs. And we make it plain to potential customers [of Megacom and software-defined networks] that routing that way would probably be more expensive than going on-net. Those folks are sharp enough to know the best price performance they can get.

Richard Snowden
director
service concepts
AT&T Communications, Inc.

▶ INTERVIEW

Richard Snowden markets ISDN

AT&T Communications' director of service concepts talks networks.

BY SHARON SCULLY
Senior Editor

As director of service concepts for AT&T Communications, Inc., Richard Snowden is integrally involved in formulating the company's strategy for marketing integrated services digital network services. A longtime Bell System veteran, Snowden was recently interviewed by Network World *Senior Editor Sharon Scully, following an announcement by Nynex Corp. and New York Telephone Co. that focused industry attention on competition between these now separate parts of the former Bell System. New York Telephone officials declined the opportunity to participate in the interview or respond to Snowden's comments.*

AT&T Network Systems makes central office switches and hopes to sell them to the Bell operating companies, many of which increasingly view your long-distance network as a bypass threat. Isn't that a conflict of interest?
AT&T Network Systems is an equipment supplier, the majority of whose equipment is used by AT&T Communications. Clearly, Network Systems builds to our specs.

But if they are forging the type of relationship central office vendors must have to succeed with local telephone companies, then they must be helping the BOCs do the same things AT&T Communications wants to do. The BOCs, as witnessed by New York Telephone's new Intellihub services, view AT&T Communications as competition, and they seem to be focusing on account control. They're in a better position to control accounts by introducing services, like Intellihub, which discourage direct dealing with long-distance carriers like AT&T Communications.
That has nothing to do with Network Systems. That's a question of the kind of services and performance you provide the customers, the richness of your service line. Account control has practically nothing to do with an equipment supplier. The equipment supplier will make its decision on what to build based on what its markets are.

But AT&T has positioned itself, or has been positioned, with three separate companies and three different markets. How is Network Systems able to cater to AT&T Communications and the BOCs at the same time?
People seem to want to portray our relationship with the local exchange carriers as some sort of death-grip struggle, which it is not. The fact is, in the telecommunications infrastructure, you have options.

Certainly, the local exchange carriers are going to have ISDN interfaces. The major thrust for those interfaces happens to be a basic rate interface, at this point in time.

However, they will clearly develop the primary rate interface as well, as will we. The question then, when we finally get to providing services with those interfaces, is how to keep prices related to costs so that you don't have cross-subsidies flowing all over to hell and gone.

The customer will choose based on economics and the kind of services that are offered. In fact, that's to our benefit. While we see a number of large customers that we believe will find it attractive to interconnect directly with our node, most large customers also have small branch locations that would not be economical to connect directly. Those smaller locations would find it more economical to interconnect with a local exchange carrier.

Both AT&T and the BOCs are best served by offering primary rate interfaces whose prices are based upon the underlying costs of providing those services. Let the customer make his choice based upon his perception of the economics involved.

See **Snowden** page 10

INDUSTRY EYE
SHARON SCULLY

Common carriers in the local loop?

Stock traders, U.S. District Court Judge Harold Greene, journalists and anyone who likes a good game of strategy should enjoy what's coming with regard to competition in, out of and away from the local telephone exchanges this year.

On the one hand, consider a Bell operating company, like New York Telephone Co., which recently announced a new virtual private network service called Intellihub. The not-yet tariffed service will allow the company to sell dedicated portions of its public network. This will directly interconnect users to its Class 5 local exchange offices, in order to hold on to the business giants its Manhattan franchise features.

Not insignificantly, the service will also allow New York Telephone to at least discourage users from dealing directly with interexchange carriers.

Then consider what divestiture decreed to be an interexchange carrier. Not only did AT&T Communications, Inc. make the first move with its virtual private network offerings, Megacom and Software Defined Network services, but the company reportedly is taking delivery on dial-tone capability for the 4ESS toll switch. To a source inside New York Telephone, that means AT&T Communications is preparing to move even further into the BOC's local franchised monopoly. To a company that has seen recent flight from its network by the likes of Merrill Lynch and American Express, both big AT&T accounts, that means bypass.

But are AT&T Communications and other interexchange carriers interested in the local exchange? That depends.

First of all, they're not unilaterally allowed in. Most states still prohibit intra-local access and transport area competition, and all states restrict it.

Spokesmen for AT&T Communications and MCI Communications Corp. deny they have plans to engage in intra-lata competition, but then, most competitive enterprises aren't shy about covering up their plans.

A spokeswoman for AT&T Network Systems, the company that makes the 4ESS toll switch and is now shipping the new Generic 10 software read the company line as follows.

"First of all, the software doesn't provide dial-tone capability. What it provides is direct connection to a PBX. It is not something that lets you pick up the telephone and have dial tone to the 4ESS."

Asked if the direct PBX connection could allow something like a Centrex-type service, the spokeswoman wasn't clear. She said inquiries would have to be directed to AT&T Communications, which bought the relevant Generic 10 features from its Network Systems Division on a proprietary basis.

AT&T Communications, asked if it was planning to offer intra-lata services, said no, but would not comment before press deadlines on further questions, such as what the Generic 10 software costs.

Eastern Management Group, an industry consulting firm in Parsippany, N.J., said at a seminar in New York two weeks ago that interexchange carriers were planning to introduce Centrex-like intra-Lata services within 18 months.

According to Al Fross, a vice-president for Eastern Management, "If you take a look at what an interexchange carrier has out there already in their

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In that context, how do you explain the new American Express high-rise building on Wall Street, which has a new premises-based 5ESS central office switch and completely bypasses the New York Telephone 5ESS central office directly across the street?

No, it doesn't. Well, it may. Interconnecting those large locations — when they have a premises switch — with a Class 5 local telco switch does nothing but switch calls to a toll office. It doesn't really do anything. Why put the switch in there at all? That, by the way, was going on before divestiture. There's nothing new there.

It depends on whose Class 5 switch you're talking about. And Nynex and AT&T are separate companies now. They both sell stock, and they both answer to a board of directors. Both have management interested in improving sales performance.

Neither company's management is going to succeed very well if doing well means they opt for the short term. If they begin to play games that harm the customer, neither is going to do well. You want to develop the most economic serving arrangement to meet the needs of customers.

If that involves the access of a customer premises-based switching vehicle for part of his traffic directly to a node provided by an intercity carrier, be that carrier AT&T Communications or any other intercity carrier, that's the way we ought to serve the customer.

It's not a question of bypass; it's purely a question of the most efficient serving arrangement for the customer. In most cases, that will involve switching through the Class 5 office of the local exchange carrier.

Clearly, the most heated competition right now is focused on the large business customers. Nynex wants those customers just as much as AT&T, or Merrill Lynch, for that matter. (Note: Merrill Lynch bypasses New York Telephone by connecting directly to a fiber-optic network in Manhattan which is owned by a subsidiary of Merrill Lynch. Merrill Lynch is an AT&T long-distance account.) Nynex is most definite about referring to it as bypass.

I view that largely as rhetoric, quite honestly. The fact is that customers like Merrill Lynch and American Express are very sophisticated customers with large telecommunications staffs of their own. A good part of those staffs are people from either New York Telephone or AT&T, who know the telecommunications industry well. Those customers are not going to put themselves at the control of either AT&T or New York Telephone.

What about the competition between AT&T Network Systems and Northern Telecom? Did divestiture give Northern an advantage? Is their involvement with New York Telephone and Nynex an example of a way they can market their central office equipment to telephone companies that Network Systems is precluded from? Are there any instances where AT&T Network Systems has worked with a BOC on a similar project?

It's in our business interest to have Network Systems do things like that. If you think there's a strategy that prohibits them from developing things for the BOCs because somebody perceives that it may get in the way of AT&T Communications, no way. It is free to develop its markets as it sees fit.

As far as we are concerned at AT&T Communications, we'll do what we can to meet the needs of our customers. In many cases, that will have to involve the distribution channels provided by the telephone companies. I can certainly understand why a company may find it advantageous to work with Northern Telecom, as well as other vendors.

I'm sure there are BOCs doing basic rate interfaces with Siemens, too.

And I don't see anything unique in what Nynex is providing [L.F. Rothschild]. But it could appear to Rothschild that what they are getting is ISDN. It depends on what Rothschild needs. It's not an ISDN interface, and it can't provide them with the features of ISDN.

We have committed to a message-oriented signaling interface because we think that sophisticated customers will require the sophistication of managing those large networks with specific applications. That's going to require something a lot more robust than these in-band signaling schemes. We embrace the notion of a full implementation of the ISDN standard, including a 64K bit/sec clear-channel capability because we think, as we move into that ISDN environment in the late '80s, that's what the sophisticated customer is going to demand.

There are other things I think we need to be very clear on with regard to this bypass rhetoric. I go back a long time in the development of the 4ESS machine, up to the point when we were working on the second generic in 1977, before anybody thought much about divestiture. From 1977 on, in every generic of the 4ESS, we always had the provision to provide for a direct interface to a 4ESS from a customer location. In fact, we had implemented a direct interface to the 4ESS for inbound Wats long before divestiture. Only then, nobody called it bypass. Why is it bypass now? It just turns out to be the most efficient way to serve a customer. What causes that confusion is an exercise called divestiture.

Isn't it because you're now bypassing the switch of another company, with another board of directors?

From the company's view, the local exchange carriers still recover all their nontraffic sensitive costs through carrier common line charges or subscriber line charges.

They just take their investment in local loop plant and divide it by minutes and that's it. It's a fixed cost. All this does, if you step back and forget all the political rhetoric, is prove you're really putting in a switch you don't need in this connection. And you don't need it anymore today than you did before.

We'd all be crazy if we went to a customer and said, "Look, we want you to directly connect to our 4ESS machine and not be served by a local exchange carrier," when in fact the most efficient way to serve that customer is through the local exchange carrier.

That would really be dumb on our part, because, assuming that we were terrific salesmen — which the world sort of doubts — we might be able to fool that customer for a few months. But those guys aren't dumb.

I still have a number of friends in those local carrier exchanges, and we chat about these things every now and then. The fact is that once you get past all the posturing, they see things pretty much the same. Much of this hoopla that we hear now in the press is going to die down. That doesn't mean we and the local exchange carriers aren't going to have differences, because we will.

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network vs. what they would need to provide complete end-to-end service, there's not a whole lot missing, especially in high-density areas like Manhattan."

Another way for an interexchange carrier, particularly AT&T, to move into the local exchange business is to sell local exchange switches directly to end users. Premises-based Class 5 switches, such as the one recently bought by American Express Co., would provide the user no economic reason to direct local traffic to the telephone company's identical Class 5 switch.

According to Fross, interexchange carrier motivation toward the local loop is strong. "Even though no one has done a study, there is an accepted theory that whoever controls the local loop will get the add-on business, and there's every indication that will include the long-distance business as well."

According to Gary Tobin, a spokesman for MCI, "The way we work is, if a customer wants to provide his or her own access, we'll allow them to do it. We want to have as good or better a relationship with the BOCs than AT&T has.

"Our concept is, you call it bypass, we call it alternative access. It's much less a threat to local phone companies than anyone will admit, and in fact, public utility commission testimony confirms that. The biggest potential bypassers are actually the states and AT&T. But then a lot of bypass networks are really built on one end and the other by the local operating companies themselves. Now that's bypass because it's not in the local rate base," Tobin said.

Would MCI be planning something like a Centrex service? "If that implies we're going into the equipment business, forget it," Tobin said. "But if you can provide with software something that has the same capabilities, like a virtual private network that has seven- or 10-digit dialing, and where you can put together your own private network without really having your own private network. That's something everybody in the industry is talking about," he said.

"What we might do is have something that would make customers come to us to take a service which would give them all the features of Centrex. In a Centrex environment, you have to sign up individual lines. We'd obviously rather not sign up individual lines."

TELECOM TRENDS

800 Service rate cut

In a move obscured by sweeping rate changes proposed April 24, AT&T Communications, Inc. put into effect May 1 a 3% usage rate cut, originally requested last February, for AT&T 800 Service. A further decrease of 9.8% will go into effect June 1 if the Federal Communications Commission grants AT&T its latest request.

User survey: Profile of Centrex vs. PBX sites

Centrex user		PBX user
4,594	Total employees at site	1,812
2,085	Total number of extensions	925
19	Total number of U.S. locations	23
2,745	Number of voice lines installed	915
550	Number of data lines installed	135
32	Number of foreign exchange lines installed	11
175	Number of lease lines installed	100
55	Number of Wats lines installed	21

SOURCE: THE MARKET INFORMATION CENTER, INC., MARLBOROUGH, MASS.

CROSS TALK

JOHN DIX

Long living fiber optics

Advances in fiber-optic technology are far outpacing the ability of the telecommunications industry to capitalize on new developments, but part of the beauty of fiber systems is that they can be upgraded periodically once the cable is laid.

Signal speed has been used as a benchmark of fiber technology development during the past few years and still provides a good gauge.

This month, Nippon Telegraph & Telephone (NTT) tested a new high-capacity fiber system, the F-1.6G, over a 75-mile route in Japan.

The 1.6-billion bit/sec NTT system, which consists of two single-mode fibers, one for each direction of transmission, can support 23,040 bidirectional voice channels. This is a fourfold increase over the company's 400M bit/sec fiber system.

Few carriers, however, can afford to install these systems because of the capital they have tied up in older equipment, including copper wire and telephone poles.

Before the divestiture of AT&T, the Bell System had more than $150 billion worth of assets. Although now distributed between AT&T and seven regional operating companies, the carriers are still burdened with outdated assets.

Stiff asset depreciation schedules make it difficult for these companies to shed these assets, the wooden parts of their bodies. The Federal Communications Commission required the Bell System to write off equipment over a long period of time to limit the amount of capital expenditures the carriers could write down against revenue in any one year.

This resulted in low telephone bills, but saddled carriers with old equipment.

Integrated services digital networks promise to enable telephone carriers to wring more service out of existing copper plant by installing new electronics at either end of the wire. This will expand the capacity of the network without requiring the outside plant to be overhauled.

Slowly but surely, however, carriers are migrating to fiber optics for reliability, speed and capacity. Unlike copper wire and ISDN, with time, fiber may enable networks installed today to be expanded in capacity 1,000 to 2,000 times.

These capacity watersheds will be realized by encoding more information on the same glass strand, not by increasing the systems' overall speed, although that is still feasible.

This means carriers can install single-mode fiber nets today, upgrade them for speed by swapping out the terminal electronics and be assured that future developments will increase the value of the fiber plant, instead of turning it into an asset burden.

ANALYSIS

Luma video phone out

A nifty technology debuts, but its applications are something less than realistic.

BY JOHN DIX
Senior Editor

SANTA CLARA, Calif. — Luma Telecom, Inc., a start-up company headquartered here, last week unveiled a $1,450 video telephone the size of a notebook.

While the device brings the concept of picture telephones closer to everyman, limitations of the technology continue to obscure sensible applications.

Luma Telecom is a subsidiary of Mitsubishi Electric, which formed the company after buying the basic engineering designs and working prototypes of the visual telephone in 1984 from Atari Corp., a subsidiary of Warner Communications, Inc.

Luma combines a telephone with a 3-in. diagonal screen and a black and white camera. Images roughly equivalent to black and white snapshots can be transmitted between Luma units over standard dial-up telephone lines in 1.5 to 5.5 sec, depending on image size. Picture transmission interrupts voice conversation.

> *"Luma combines a telephone with a 3-in. diagonal screen and a black and white camera."*

The screen is split between a live image of the user and a still image of the remote caller. When one of the callers wants to send an image, he selects the desired size and pushes the send button.

The larger the picture, the longer the transmission time. The live image is frozen and transmitted, and the local image then turns live again.

Technological advances make it possible for Luma to transmit video images without compressing the video signal. This process has contributed to the higher cost of some Luma competitors.

The bottleneck all vendors of video telecommunications gear face is the 4,000 Hz bandwidth of standard telephone lines. Full-motion video signals have a bandwidth of 4.2 million Hz, requiring roughly 90 million bits of information to encode digitally for transmission, according to Luma Telecom.

Video compression techniques can reduce the information needed to carry on a full-motion video conference using 56K bit/sec digital communications links. This requires high-priced compression equipment and expensive usage fees.

Instead of compression, Luma distills images by reducing the number of picture elements and brightness levels needed to obtain adequate picture quality. Components include a miniaturized television monitor called a vidicon camera and the patented Video Optimized Modem. The modem is said to process the video image and convert it into a signal compatible with voice-grade telephone lines.

The Luma camera lens has a fixed focal range of 24 in. and a depth of field of up to 28 in., meaning objects must be no closer to the camera than 2 ft. and no farther than 52 in. to be in focus. Displayed images can be printed on an optional printer; however, the device cannot be connected to a computer.

While smaller and less expensive than many available video tele-

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▶ VOICE MAIL

Rolm adds Profs

Phonemail enhanced for IBM VM.

BY MARY PETROSKY
West Coast Correspondent

SANTA CLARA, Calif. — Rolm Corp. last week announced a series of new capabilities for its Phonemail voice messaging system, including integration with IBM's Professional Office Systems (Profs) and Voice Text Messaging System (VTMS), which run under the IBM Virtual Machine operating system. The company also announced eight new Phonemail features, and expanded support for non-Rolm private-branch exchange and Centrex systems.

The integration of Phonemail with the IBM Profs and VTMS environment gives users a single "in box" for all messages, according to Rich Zalisk, general manager of the Messaging Products Division.

Users of both systems can be notified through Phonemail that they have electronic messages waiting or they can be told through the IBM text messaging system that they have Phonemail. In this way, users are able to see if they have messages on either system by checking only one.

"We're trying to integrate voice as an equal member in office automation applications, at least in the IBM office," Zalisk said. Voice store-and-forward has tended to lag behind other office automation applications, although it has grown at a rate of 75% a year for the past several years, he said.

Although Zalisk called the combined notification capability a first step in integrating different messaging systems, he would not elaborate on other mixed voice and text messaging capabilities that might be offered.

Zalisk said Rolm currently has no plans to integrate Phonemail with other vendors' text messaging systems, but would consider doing so if user demand is great enough.

User input fueled the addition of eight new Phonemail features, he said. New features for users include the ability to:

- Address messages and transfer out of Phonemail by using either the name of the person to be contacted or their extension;
- Use separate greetings for external and internal calls (users of Rolm's CBX can also use different greetings for calls resulting in a busy signal and those that ring with no answer);
- Create and maintain up to 10 personal distribution lists containing as many as 20 subscribers per list;
- Transfer back to an internal message sender immediately after receiving a message, without entering a name or extension number;
- Use abbreviated Phonemail prompts instead of standard prompts;
- And specify an alternate contact, so calls are automatically forwarded to another person.

In addition, systems administrators can now create a system distribution list with as many as 400 subscribers on a single list. Administrators also have the option to designate a Phonemail operator, to whom callers can be routed rather than a console operator.

Rolm has also expanded Phonemail capabilities for non-Rolm PBXs, including increasing to 8,000 the number of voice messaging subscribers supported. Users of non-Rolm systems can now use Phonemail to answer incoming calls for an organization or a department, reducing the need for an attendant.

According to Rolm, users can eliminate direct inward dial costs in this way, because calls can come in over standard central office trunks directly to Phonemail, which then routes them to individual parties.

Phonemail/VM is available now and ranges in price from $2,000 for a four-channel model to $6,000 for a 16-channel unit.

▶ LOCAL NETS

UB to market Netware

Software slated for use on Net/One.

BY JOHN DIX
Senior Editor

SANTA CLARA, Calif. — Ungermann-Bass, Inc., the largest vendor of broadband local-area networks, announced last week it will market Novell, Inc.'s Netware network operating system for use on its Net/One Personal Connection local network. Users of the UB personal computer net can now select from three network operating systems, including Microsoft Corp.'s Microsoft Networks and the IBM Personal Computer Network Program.

Netware brings high performance and security attributes to the Net/One Personal Connection stable of operating software, according to Mark Calkins, UB group product manager.

Netware is compatible with DOS 3.1, 3.2 and IBM's Network Basic I/O System, making it compatible with more than 3,000 multiuser applications, a Novell spokesman said. Novell claims it has installed Netware on more than 30,000 file servers supporting more than 200,000 workstations.

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phone devices, Luma shares a common uphill battle with its competitors: creation of need. Few applications can really benefit from the technology. Some of the better ones outlined by the company include entertainment casting and banking and financial services.

Even in these applications, Luma is limited by the fact that one unit is needed at each end of the link.

In business conversations, it is conceivable Luma could benefit users by transferring images of the callers when the conversation is established. It is inconceivable, however, to think callers would take time out during their conversations to transfer images of themselves in slightly different poses.

Image transfer during a conversation may be desired if the participants have something to show each other, such as a drawing or a piece of equipment. But Luma is limited for that application because of the size of the screen and the quality of the image transmitted.

One of Luma Telecom's competitors, Image Data Corp., markets Photophone, which is targeted exactly at that application. The device is better suited to the task because of its larger, high-resolution screen and articulated arm camera mount.

Although innovative, Luma is not so much ahead of its time as it is misfocused.

DATA DELIVERY

"OSI really stands for Overthrow SNA Imperialist. When talking about OSI, every supporter says in one breath how good OSI is, then immediately follows with a tirade concerning how bad SNA is."

Wushow Chou
director
computer studies program
North Carolina State University
Raleigh, N.C.

▶ CDCNET

School halves net costs

BY MICHAEL FAHEY
Staff Writer

MINNEAPOLIS — The University of Minnesota's recent installation of a new Ethernet-based network has cut the school's network maintenance costs in half.

The university was able to halve maintenance expenses by installing a Control Data Corp. (CDC) Distributed Communications Network (CDCNET) in January, according to Lee Croat, director of the health sciences computing services at the university. An InteCom, Inc. digital private branch exchange and fiber-optic wiring installed by US West,

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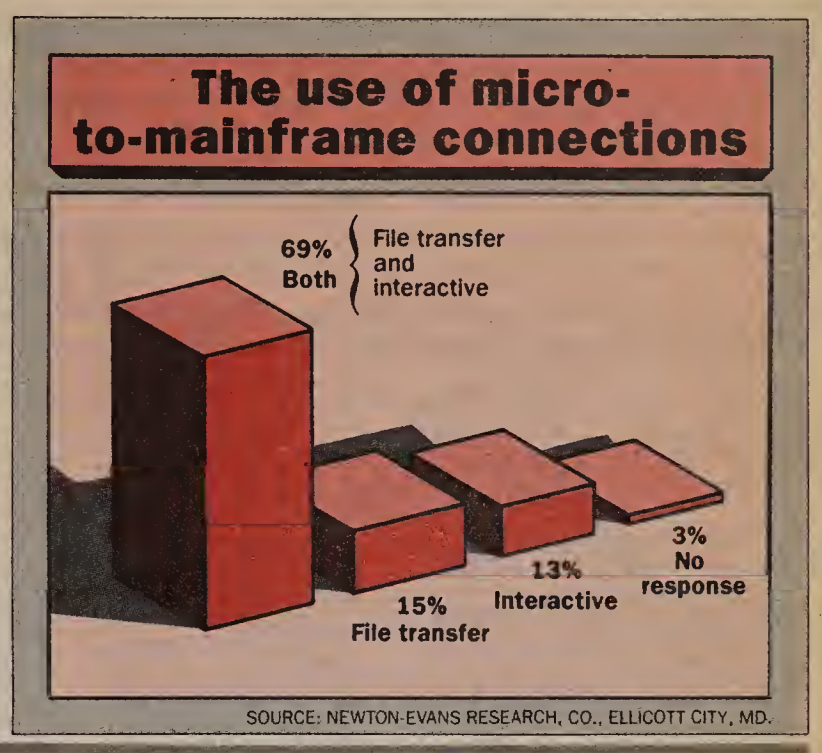

DATA DIALOGUE
PAUL KORZENIOWSKI

IBM users blue over metamorphosis

IBM has continually proven incorrect the adage, "You can't make a silk purse out of a sow's ear." The company has taken a number of ugly products, positioned them in profitable markets and made a boodle of money from them.

This situation is great for IBM and its shareholders, but unfortunately, it is not very helpful to Big Blue users. Often, customers have been saddled with less-than-elegant products and solutions that created more problems than they solved.

The latest example of this scenario is IBM's movement in the office automation arena. As the term "departmental system" came into industry jargon, IBM took a close look at its product line and decided that a few existing systems could be positioned in this emerging, lucrative market.

The first product poised for entry was the IBM System/36. The System/36 had been designed as a successor to the IBM System/34, a minicomputer that competed with Digital Equipment Corp. and Data General Corp. offerings. In the low-end system market, the product had built a loyal following.

Last month, IBM added to its office automation arsenal a second device, its Series/1 minicomputer. This system had gained a solid reputation as a data collection device in the scientific and engineering markets. Software was added so the device could support the emerging IBM document transfer standards, Document Content Architecture and Document Interchange Architecture.

Even though the two machines were suitable machines in their respective markets, they are not good office systems. The System/36 is saddled with poor office automation software and insufficient processing power. The Series/1's problems include poor software and an outdated system architecture.

> *"Customers have been saddled with less-than-elegant products and solutions that created more problems than they solved."*

The problems do not come from the systems themselves, but from IBM's tendency to take existing products and weave a tapestry of different offerings. This costs much less than developing new systems.

However, it does present some drawbacks. The System/36 and the Series/1 do not have the processing power needed to support a department filled with knowledge workers. IBM's systems pale when compared to those offered by DEC and DG. The software situation is not much better. Office automation software has been ported across the IBM product line in a haphazard manner. A user who requires a System/36, an IBM Personal Computer and an IBM 3270 series encounters three different keyboards and three different interfaces. Transferring data across the three systems can be cumbersome.

Companies that have worked extensively with the Series/1 and the System/36 understand that the machines are not appropriate office systems. Two of the largest Series/1 users, State Farm Fire & Casualty Co., based in Bloomington, Ill., and J.C. Penny Co., Inc., in New York, do not plan to use the device for office automation. McKesson Corp., an Oakland, Calif.-based pharmaceutical company and a beta site for the System/36, won't use it in the office.

Companies unfamiliar with these systems may be duped into

See **IBM** page 16

▶ NET MANAGEMENT

DEC system debuts

BY JIM BROWN
New Products Editor

MARLBORO, Mass. — Digital Equipment Corp. introduced a network management system that supports up to 16 nodes on a DEC VAXcluster network and fiber-optic media.

The VAXcluster Console System is based on a DEC MicroVAX II minicomputer and enables local and remote terminals to perform network diagnostics.

The network management package gathers information such as individual node status and system logging reports and stores the data on a disk. Reports can be printed out by a console at any node in the network.

The MicroVAX II accepts input from all nodes and automatically stamps all messages with the time. System managers can use a DEC VT 241 terminal to perform diagnostic tests of each node in the cluster, examine a particular node in the cluster or coordinate a node's activity with other nodes in the cluster. The console can also be accessed from a remote terminal by a modem.

The VAXcluster Console System comes standard with the MicroVAX II minicomputer with 5M bytes of storage and a DEC VT 241 terminal, as well as fiber-optic converters and power supply, fiber-optic cable and associated software, including a MicroVMS system license. VAXcluster Console System prices start at $45,225. Shipments are scheduled to begin in July.

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Inc. link together CDCNET nodes, which act as front-end processors. The network, installed at a cost of roughly $100,000, replaced another network controlled by a number of CDC communications front-end processors.

Croat said, "Maintenance costs went from about $800 a month on the front-end and associated hardware to about $400, and we increased our number of ports 25%."

The network is used to support a number of health science departments and schools, including the medical, dental and nursing schools. "We basically act as a computer service bureau," Croat said. "We have 128 ports on our CDCNET and support a number of applications from administration projects to kidney and liver transplant research."

A principal benefit is the network's high-speed transmission. "We can do high-speed communications between mainframes through the CDC boxes. As far as terminals go, we can support any standard asynchronous terminal, and we have software that allows us to communicate with IBM Personal Computers and compatibles," he added.

> *"We act as a computer service bureau."*

The center has asynchronous terminals connected by twisted-pair wiring to CDCNET, which operates at speeds of 38.4 bit/sec. CDC Viking terminals work at speeds of 19.2 bit/sec and personal computers run at 9.2 bit/sec, according to Croat.

The high-speed asynchronous transmissions enable the department to cut processing costs. "We want to keep costs down as much as possible to make host processing a viable option to complement micros," Croat said. "We are trying to network micros so the host can be used as a communications and networking tool."

For example, Croat said, microcomputers can access the system's laser printer. "You can send your output up from the micro to the host," he said. "Essentially, you would have a laser printer without the expense locally. It is a shared expense. Everyone can't afford the high quality devices, but why not have access to them and share the cost? To us, that is what is important with micros."

The CDCNET also offers the flexibility to add ports at a reasonable cost, according to Croat. "Because of its modular concept, you can add [ports] without a great deal of difficulty. If we ran out of ports on the 2551, we would have had to add another one. Now we add another terminal device and get another 32 ports."

IBM from **page 15**
using them as departmental systems. A few years ago, Alumax Fabricated Products, based in Riverside, Calif., developed a number of Series/1 office automation applications. The project was such a disaster that the company plans to dump the Series/1 and migrate the applications to personal computers. Alumax's decision cost the company money and lost business opportunities and time. The migration process will require at least two years.

Unfortunately, a number of companies may follow Alumax's lead. Many are looking at the System/36 for office automation; some Series/1 users are interested in that system's office automation capabilities. Before purchasing these systems, companies should take a close look at them and see exactly what they're made of. Most companies will not like what they see.

▶ NORTHERN TELECOM

Firm adds high-speed terminal

BY JIM BROWN
New Products Editor

ATLANTA — Northern Telecom, Inc. introduced an on-site fiber optics-based terminal that links private telephone systems or private branch exchanges to the public telephone network.

Operating at a transmission speed of 45M bit/sec, the FMT-45C supports 28 DS-1 lines simultaneously or a combination of up to 672 voice-grade channels carrying either voice or data.

The 22-in. wall- or floor-mounted device provides fiber interfaces and a fiber-splicing tray, a multiplexer, a power supply with battery backup, a jack field and alarm remoting.

An FMT-45C supporting 28 DS-1 lines is priced at $24,000.

FACTORY COMMUNICATIONS

IBM, Ethernet link set

Touch Communications, Inc. is planning to demonstrate software that allows an Ethernet local-area network to link to IBM's Token-Ring Network. Software being developed by the company will reportedly be compatible with Layers 2 through 7 of the International Standards Organization's Open Systems Interconnect (OSI) reference model. The company plans to announce its OSI software later this year.

▶ IBM

John Klein on industrial nets

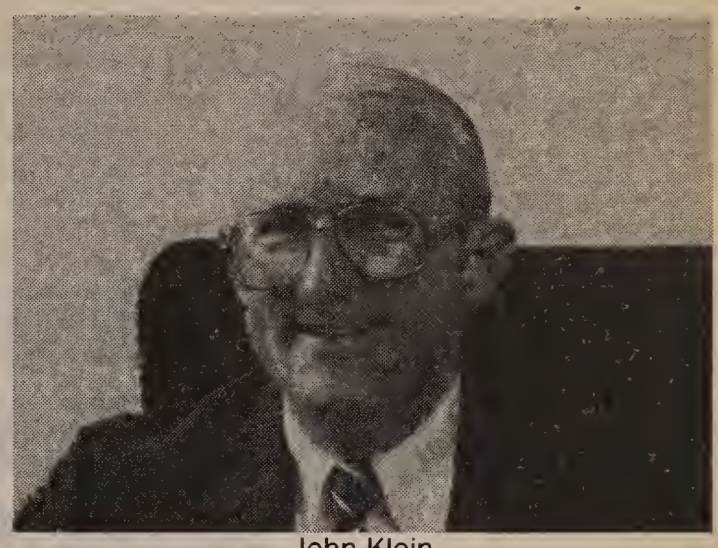
IBM's market development director for industrial networking policy speaks on future directions.

The factory networking marketplace is growing at a tremendous clip. IBM recently consolidated its manufacturing efforts by placing its Manufacturing Systems Products Group and its Engineering Systems Products Group under the command of its Industrial Systems Organization.

Although proprietary local-area networks are widely used on the factory floor today, systems that comply with the Manufacturing Automation Protocol (MAP) will soon be the rage of the manufacturing world. IBM is working to develop such a network. Today, the company's industrial computers can be connected to a broadband MAP network via interface cards provided by Industrial Networking, Inc. (INI) of Santa Clara, Calif.

Big Blue debuted a pair of MAP-compliant software products for its Series/1 minicomputers in 1985. In January, IBM signed a joint development agreement with INI, the results of which are still unclear. IBM is test-piloting a MAP application in its Endicott, N.Y., manufacturing facility (see "IBM manages MAP project," Network World, *March 24).*

Recently, Network World *Senior Writer Bob Wallace interviewed John Klein to discuss IBM's industrial networking strategy. In April 1984, Klein became market development director for IBM's newly created Industrial Systems Organization. Klein became Manufacturing Systems Products general manager in July 1984.*



John Klein

What is the single biggest challenge for U.S. manufacturing companies?

If manufacturing companies are going to be suc-

See **Klein** page 18

INCIDENTALS

Cincinnati Milacron, Inc. signed a joint development agreement with IBM to develop computer integrated manufacturing software. The software will be designed to control and manage information to support factory floor applications.

Central New England College in Westborough, Mass., is offering a pair of factory communications-related seminars.

The first seminar, Manufacturing Resource Planning, will explain the logical planning and control of the manufacturing environment. The course will be held on June 16-18 and costs $395.

The second seminar, entitled Robots in Manufacturing, will be held June 25 and costs $195.

For additional information on the seminars, contact Central New England College at (617) 755-4314.

Richard Schwartz, president of the Rocketdyne Division of Rockwell International Corp. in Canoga Park, Calif., will be the featured speaker at the Synergy '86 Conference on Functional Interfacing for Computer Integrated Manufacturing. The conference is sponsored by the Society of Manufacturing Engineers (SME) and the American Production and Inventory Control Society. It will be held from June 16-18 at the Sheraton-Universal Hotel in Universal City, Calif.

For additional information, contact Cheri Willetts of SME at (313) 271-1500.

FACTORY FACTS

BOB WALLACE

Look Ma, no hands (or eyes)

Intel Corp. is working to connect humans to factory floor networks.

The Santa Clara, Calif.-based semiconductor giant has developed a line of speech-recognition products designed to allow factory workers to enter information into plant floor nets without using their hands or eyes.

While most vendors are laboring feverishly to connect hardware to factory networks, Intel's products are targeted for use by factory workers in inspection and quality control applications. The list of end users of the speech workstation include General Motors Corp., Ford Motor Co. and Eastman Kodak Co.

Intel is peddling an industrial speech workstation, a speech application development workstation and a device capable of controlling multiple speech workstations in a manufacturing cell.

The speech workstation could be used to allow a worker to crawl through a completed automobile, check for product defects and verbally enter his findings into the workstation through a wireless headset.

Len Magnuson, OEM communications marketing manager for Intel, said, "Too often we become enamored with new technologies in the factory and forget how to connect the human being to these new capabilities. It is important to make sure you improve the human factors in the factory as well as making sure machines can communicate with each other."

Magnuson claims the speech-recognition products will replace the time-consuming report writing and data entry procedures common to most quality control applications today. The workstation must be programmed to recognize its master's voice as well as a collection of terms he would use in the course of inspecting a finished product. The product can recognize more than 200 phrases.

The workstation can be trained to understand a user's voice in 20 minutes. Three to five days are needed to train a factory floor worker to use the system.

The workstation, which is equipped with a speech synthesis board, repeats each of the user's verbal commands for verification purposes before they are entered into the system.

When the product inspection is completed, the inspector's comments, his identity, the type of product inspected and the time of the inspection are recorded in the workstation's memory.

The results of the inspection may be channeled to Intel's speech cell controller device over RS-232 connections. The inspection information can be sent from the cell controller to a computer hooked to a factory net via an Intel software product that conforms with the first four layers of the seven-layer Manufacturing Automation Protocol Version 2.1 specification.

Magnuson said several auto manufacturers, aerospace companies and process manufacturing companies have shown an interest in the speech recognition system. In late March, Intel signed an agreement with Electronic Data Systems Corp. to develop enhancements for the speech-based information system that Electronic Data Systems would later purchase from Intel.

Klein from **page 17**
cessful, they have to bridge the gap between product design engineers and manufacturing planners. Companies have to link the engineering personnel to the factory floor personnel so that products designed by the engineers are manufacturable in a cost-effective manner. What happens now is plant floor personnel decide how a product is going to be manufactured, a view that is often different from the way the design engineer envisioned the product would be built.

What is IBM's tack on building manufacturing products based on a protocol that is currently incomplete?
While it is true that MAP is still evolving as a standard, there are several pieces of the specification that have become international standards. It is IBM's view that enough of MAP's layers have been defined and can be implemented in actual products.

What is the current state of IBM's joint development agreement with INI?
We don't speculate on unannounced products and we don't speculate on agreements that may or may not produce anything. You enter into any agreement like this one hoping that the end result will be products.

When you market manufacturing networks to end users, do you offer INI equipment as part of the package?
We are not offering INI equipment as a component of our manufacturing systems. All we are doing is demonstrating that if you want to attach our industrial computers to a MAP node, there is a vendor in the marketplace that has interface cards compatible with our industrial computers.

You recently said IBM's new robotics systems will be sold through systems integrators. What role do these organizations play in packaging complete manufacturing systems?
IBM has been working with systems integrators for as long as we have been in the robotics industry. Our belief has always been that users buy applications, not hardware. Manufacturing systems integrators look at the user's problem, look at the materials-handling system and design the manufacturing work cell in which our robot is going to operate. Systems integrators also include all the necessary instrumentation and ancillary products to fit the individual application.

We have an entire network of integrators that address either a niche market or a certain geographic area. They focus on packaging systems for specific applications. IBM has an advisory board comprised of the key executives from the major systems integrators. These people provide us with information on how our equipment performs. They also suggest product enhancements.

IBM and Ford Motor Co. recently joined forces to develop a means of operating IBM's PC Network over a portion of a broadband, local-area net. Does IBM plan to work with other manufacturing companies to develop the same capabilities for IBM's PC Network?
Ford had a PC Net installed and simply wanted to advance the use of the PC Network in several of its factories. [*Network World*, April 21]. If any product or enhancements to the PC Network are developed as the result of this project, they would be offered to the entire marketplace.

There will be incompatibilities between MAP Version 2.1 and MAP Version 3.0. Where does this leave users who have implemented MAP 2.1-compatible products with plans to upgrade the equipment eventually to MAP Version 3.0?
On one hand, this situation is no different from any release of any given product from any vendor. Users have to decide on the need for [MAP Version 3.0] enhancements and their cost.

On the other hand, users that are installing MAP products now are, for the most part, very active participants in the [MAP/TOP] user group subcommittees. The user group is a very open forum for users to exchange information. People who implement products now with a vision of what is coming with [MAP Version 3.0] should be very well insulated from major disruptions. As a vendor, IBM has to keep its eye on Version 3.0 while being supportive of Version 2.1.

Are IBM's manufacturing systems used in process manufacturing applications?
It depends on what software is used with IBM equipment. There are companies using our processors for some process-oriented applications. We have also entered into a joint development agreement with Measurex [Corp. of Cupertino, Calif.], a company that develops software for use in process industry applications. We are working with Measurex to advance the development of software for this segment of the industry.

COMMUNICATIONS MANAGER

ICA ranks swell

International Communications Association (ICA) President Duane Heidel said the ICA has increased its membership 10% over 1985 figures and now includes more than 600 corporate members. The group includes communications managers of voice, data and integrated networks. This is a change from the past, when the ICA was viewed as being purely a voice communications association.

▶ STANDARDS

Plan ahead

Lack of standards and uninformed decisions penalize users.

BY MARGIE SEMILOF
Senior Writer

Communications managers frequently base long-range, strategic plans on a hunch or a political dictum issued from senior management unfamiliar with communications technology.

The lack of communications standards is usually the culprit behind management planning based on guesses. Managers are unable to plan for the International Standards Organization's Open Systems Interconnect (OSI) model or integrated services digital network environments in the absence of specific products based on such standards.

John Blevins, manager of data communications at the Kansas City, Mo.-based Hallmark Cards, Inc., said he believes the lack of standards is the biggest stumbling block to effective strategic planning for future networks.

While waiting for standards such as OSI and ISDN to evolve, the company studies IBM's networking strategy for input on linking Hallmark's growing population of personal computers. Blevins also follows pricing changes in the dial-up communications arena in the event that management at Hallmark decides to move terminals to remote sales forces and retail outlets.

"We grew up in the leased-line environment," he said. "Now I feel like I'm out chopping weeds in the dial-up business. I have to beware of nonstandard interfaces and poor-quality circuits."

Blevins examines his five-year strategic plan each year and tries to pinpoint problems that may crop up within a two- to three-year time frame. He estimates how many terminals Hallmark can expect to support and what the requirements of the company's remote sites will be. His results are published and presented to corporate executives.

"Our findings give senior management a dart board to throw at," he said. "They can say if they think our projections are correct or ridiculous. Our reports give the executive issues to think about. Those items may not have been considered if we had not thrown some projections down on the table."

Communications managers will also be watching the imminent common carrier trials for ISDN-like services and may plan their networks based on the results of the experiments.

Michael Smith, communications and office systems manager of the Columbus, Ohio-based Borden, Inc., has built a strategic plan for his company that extends to 1995. He said he believes the plan is adaptable and can incorporate future networking standards.

Smith said one of his planning tricks is refusing to embrace proprietary vendor networking schemes. That, he said, helps prevent buying into one manufacturer's vision of future networking.

"We are fortunate that we have the staff expertise to develop our own options," he said. "Vendors typically make proposals that are in the vendors' best interest."

Managers claim that when a communications division is controlled by senior management, short-term decisions are often made that potentially affect the strategic planning for networking commitments such as OSI.

Ray Bengen, a consultant with the Franklin Center, Pa.-based Franklin Mint Corp., said long-range planning is often conducted by the wrong people within an organization — upper management. He suggested that communications managers should convince senior management to delegate the responsibility of strategic planning for the communications network or they will risk future networking problems that may adversely affect the organization.

"If communications decisions are made by senior management, the results may be reactive because they are politically motivated, rather than professionally oriented," Bengen said.

"Senior managers must give the job of network planning to the communications staff," he added. "You have to get away from politics to get the job done."

Managers can increase the elasticity of their long-range plans by leasing instead of buying equipment or by writing escape clauses into equipment contracts.

Bengen said generating a consensus of ideas among communications staffers and senior management is fundamental to effective long-range communications planning.

"Will everyone get OSI or integrated voice and data?" he asked. "If you don't know, then every little group may end up with its own strategic plan."

GUIDELINES

ERIC SCHMALL

Plan for product obsolescence

In the information age, it's easy to discern technical evolution as new products spring forth. However, too much emphasis rests on new products without sufficient reflection on older technology now passing into oblivion. One of the most difficult challenges for the communications manager as a strategist is to identify those products that are outliving their usefulness.

It's not enough to know what's hot. It's now even more critical to know what's not. Career-limiting decisions are no longer confined to the bold recommendation of the wrong new technology. It is equally possible now for the communications manager to err by committing to a product that is slipping into obsolescence. The margins of safety in these decisions are narrowing as the manager tries to navigate between the Scylla of new technology and the Charybdis of established ones.

How does one measure the life of a product or service? It is a multidimensional process that involves the organization's needs, the industry vendors and the overall technological march of history. These three factors can act as either a governor or an accelerator of decline. By assigning appropriate weighted values on each of these factors, a manager can produce an empirical estimate of a technology's or related product's given life span.

The first and most critical assessment must focus on the individual organization's communications needs. It possible to find a number of circumstances when an older, fully mature product is the best fit.

For example, an organization may find that a telex connection would give it the appropriate access to certain markets. In a limited sense, this could be an ideal fit even though the technology itself is old and slow. This emphasis, however, is on a limited application. It's a different matter to commit to hundreds of telex connections as a primary means of moving data.

There are a number of industry trends to be evaluated. They include factors that may indicate a product's viability. Look for market entrants in the product field. Are there more than last year? Are some of the major manufacturers who usually await a market demand now marketing these units? What are users demanding? Answers to these questions will yield a promising prognosis on a product's stability and longevity.

One final litmus test to apply to any product review involves abstract reasoning. What evolving technical trends will either enhance or undermine this product's useful life? Here, one must gauge the interaction between emerging technologies. A manager must project whether those technologies can peacefully coexist or become natural adversaries.

Examples of these relationships can be found in arguments about the future of private-line services. To what extent will very small aperture terminal-technology erode traditional private-line networks? How will fiber optics counteract this erosion? How will the integrated services digital network factor interweave through these technologies?

On the uneven swells of the communications sea, it is not enough for the communications manager to assume he can latch the organization's craft to some of the safer looking liners. If the product choice is not examined, the manager risks hitching a ride on the Titanic.

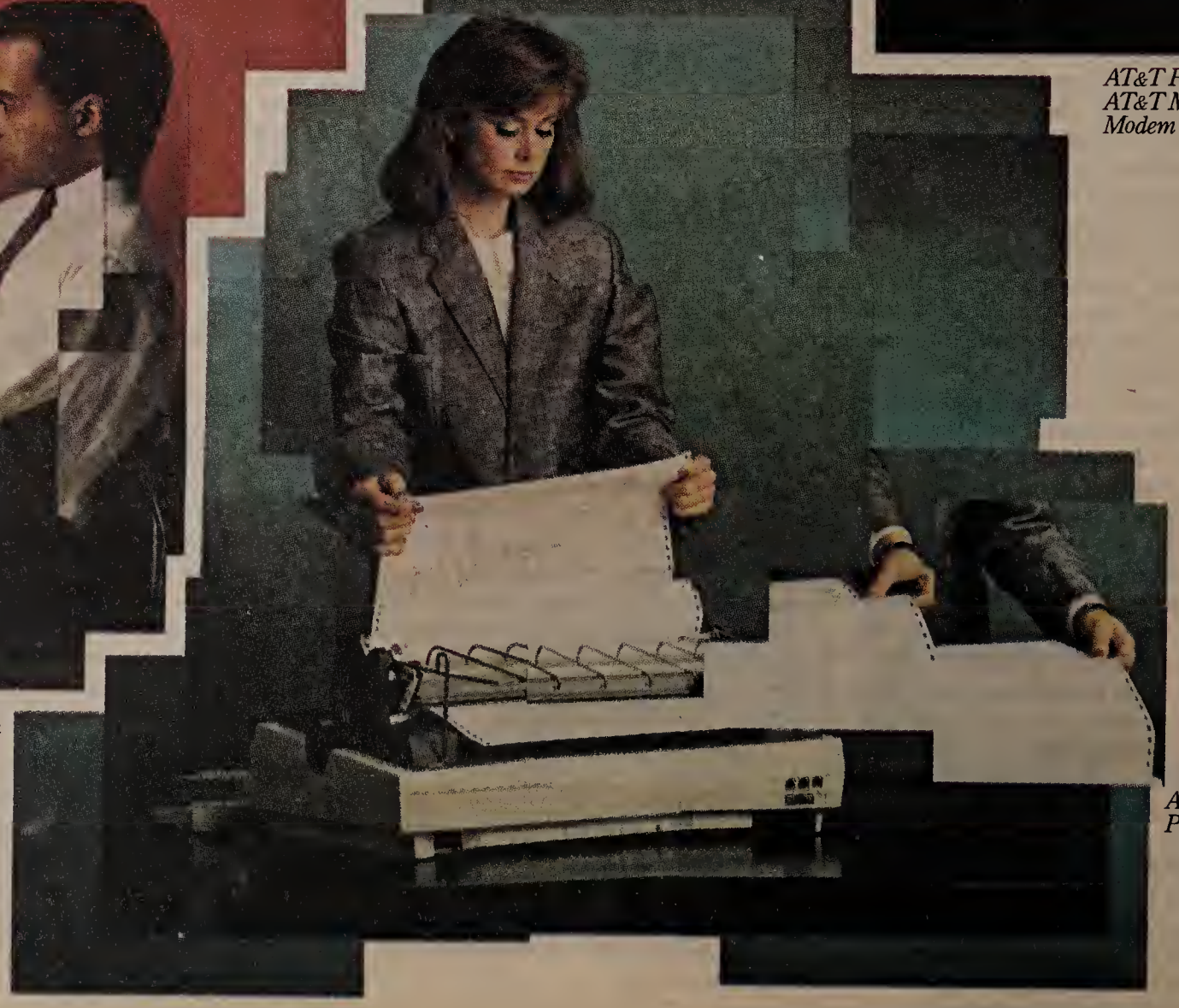
Schmall is network systems manager for an insurance holding company.

AT&T 724 Multiplexer

AT&T DATAPHONE II
System Controller

AT&T PC 6300
AT&T Model 4000
Modem

AT&T Multifunction Communication System



AT&T 455
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WASHINGTON, D.C.

ALAN PEARCE

FCC musical chairs?

Chairman Mark Fowler of the Federal Communications Commission celebrates his fifth anniversary as head of the agency this month. But the celebratory spirit has taken a back seat to the question of who Fowler's successor will be. Fowler has already stayed longer than most of his predecessors — the average "life" of a chairman hovers around the three-year mark. Yet, with his term expiring June 30, he has given no indication of whether or not he wants to be reappointed.

Until recently, it appeared inevitable that he would be succeeded by Dennis Patrick, a Californian who worked in the Reagan White House prior to his appointment to the FCC three years ago. Patrick clearly would like the job — and would probably be a highly competent leader since he has served a valuable apprenticeship under Fowler and has a good grasp of major policy issues.

Pearce is president of Information Age Economics in Washington, D.C.

The problem, however, appears to be that the White House has asked Fowler to stay on until after the November elections. Apparently, the primary reason for this is that the FCC has just been brought up to its full strength of five commissioners for the first time since last September. And it could be next to impossible to nominate a new member to replace Fowler and have that person confirmed at a time when the Senate's collective mind will be focused on the elections.

> *"Fowler has already stayed longer than most of his predecessors."*

This rationale, while perfectly understandable, threatens to diminish Patrick's chance of succession. This is because the Republicans can expect some political losses in November, creating the distinct possibility that the Reagan White House will be bombarded with requests from defeated politicians for political appointments as agency heads and members. If this situation arises, the chairmanship of the FCC could become a plum position for a politician who has just been kicked out of office.

For the time being, the FCC is back to full capacity with the recent addition of Patricia Diaz Dennis, who has moved over from the National Labor Relations Board. Dennis is serving the unexpired term of her predecessor, Henry Rivera, who resigned last September after complaining of regulatory burnout. Rivera had served on the FCC since 1981 — the year both Fowler and his Republican colleague, Mimi Weyforth Dawson, were appointed.

Diaz Dennis, like her predecessor, Rivera, is both a Hispanic American and a Democrat. She joins fellow Democrat and longest serving member of the FCC, Jim Quello, who was appointed by President Nixon in 1973.

There are still those who maintain that Fowler likes being FCC boss so much, he intends to stay on for another term or at least until the end of Reagan's term, which expires in January of 1989. This appears to be a remote prospect because Fowler, who is both energetic and dynamic, is clearly capable of making a great deal of money in the private sector. He also believes he has set the future regulatory and deregulatory course in telecommunications policy-making and can, therefore, leave the agency with the road map already sketched out.

It is apparent that even his closest aides believe Fowler is on the way out. Months ago, his senior adviser, Dan Brenner, left his staff to become director of the communications law program at the University of California at Los Angeles School of Law. At the same time,

BOC SERVICES

ROBERT L. MATTHEWS

Curing private-line madness

Rumor has it that telecommunications managers, frustrated with managing their companies' private-line networks, have been found cross-eyed and babbling in line-termination vaults with a pair of wire cutters in one hand and a mass of cable in the other.

While perhaps not yet driven to insanity, users are pushing for more flexibility in their services, more control over their facilities and lower telecommunications costs. At the same time, the Bell operating companies are striving to meet the challenge from bypassers — vendors who urge BOC customers to exchange local switched facilities for their own private networks.

In response to these market conditions, Bell Communications Research, Inc. (Bellcore) has developed a new network control system called Flexcom/Service that will enable users to gain more flexibility and control over their leased lines. The BOCs will market different versions of Flexcom to users as an alternative to bypass.

Called Flexserv/Service by BellSouth Corp., the service is tariffed in Memphis, Tenn., and is being used by a South Central Telephone Co. customer. Pacific Northwest Bell recently completed a customer trial, calling the service Commandalink/Service. Other BOCs are currently exploring strategies for their own Flexcom offerings, and each company will make its own decision on which subsets of Flexcom to provide to local customers.

The Flexcom controller is the backbone of the system. It lets customers control their interoffice facilities by connecting any point to any other, and permits them to specify how much capacity, or bandwidth, they need. Customers can also set up conference calls and reserve service for specific time intervals, all without telephone company intervention.

Matthews is district manager of Bell Communications Research, Inc.

The controller has two elements — the equipment controller and the network controller. The equipment controller provides the interface to the network.

It accepts, translates and sends customer commands to the appropriate telephone company equipment. Those commands are received from the network controller, which, along with its corresponding terminal, allows the customer (or telephone company administrator) to enter the desired commands. The network controller also provides the intelligence that makes possible the reservation of facilities, data presentation, administration and security.

> *"While perhaps not yet driven to insanity, users are pushing for more flexibility in their services."*

Bellcore designed Flexcom's software support system with the capability to send commands directly to intelligent network elements.

These elements are called intelligent because they contain microprocessors that receive and process commands electronically. Many BOCs are already using this capability for remote reconfiguration of their own networks.

Before Flexcom, networks had to be reconfigured manually in a central office. This cost valuable time and made instantaneous response to changing conditions impossible. With Flexcom, the customer can reconfigure a circuit in minutes instead of waiting days or weeks for someone at the phone company to do it.

Control alternatives

Customers can control the network themselves, or the telephone company can do it for them. Customers that want to control their circuits use terminals located on their premises. With telephone company control, the customer calls the network administrator, who then makes the desired connections. This is especially attractive to smaller businesses that may want control over their interoffice facilities but don't want to incur the expense of having their own network administrator and terminal.

Both methods offer two service capabilities: on-demand and reservation. On-demand service is similar to basic telephone service. Point-to-point service is provided within seconds of the customer's request. This service is designed for nonperiodic, unanticipated communications needs. Reservation service allows customers to reserve a certain amount of capacity for any time of day and any time interval they choose. This is useful for

See **BOC services** page 32

one of Fowler's legal assistants, Thomas Herwitz, left to become vice-president of corporate and legal affairs for Fox Television Stations, Inc., in Washington, D.C.

Even though Fowler has some-

> *"The Third Computer Inquiry will affect the FCC's upcoming regulatory decisions."*

what delayed the decision regarding who will succeed him at the FCC, Patrick still appears to be the front-runner. At 34, he is 10 years younger than Fowler, and is somewhat more analytical and less ideological than the current chairman.

In addition, the advantage to naming Patrick to the position, as opposed to bringing in an outside person, is that Patrick will not have to submit to the increasingly rigorous Senate confirmation process.

Because Patrick has already served on the FCC for some time, he knows how to manage the agency and can take over the reins of power without entering the telecommunications policy-making learning curve at zero.

A chairman without knowledge of policy making, appointed for purely political reasons, would slow the agency down at a particularly crucial period. The Third Computer Inquiry, the levels of new accounting rules, complex tariff and pricing issues and potential changes in the Modified Final Judgment will affect the FCC's upcoming regulatory and policy-making decisions.

For now, the FCC can enjoy being back to full strength. Fowler will certainly be gone by the beginning of next year.

Patrick appears to be the favorite, but competition may emerge among defeated Republican politicians who want to remain in Washington, D.C. after the November elections.

Teletoons
By Phil Frank

Within the vast spectrum of telecommunications, I'd place Fredricks in the "Better Safe Than Sorry" category.

MODERN MANAGEMENT

WALTER ULRICH

The new executives

In many companies, the position of chief information officer (CIO), where responsibility for all information, communications and office technologies is placed, is a reality. Communications managers need to be aware of this trend and should understand the implications for themselves and their staffs.

Computers, telephones and typewriters had little in common 15 years ago. The data processing manager reported to the vice-president of finance, the communications manager reported to the head of facilities management, and typewriters were in the domain of the office services supervisor. Since then, the technical distinctions have blurred.

Management information systems, communications and office system technologies must support the end user. The many interdependencies between these technologies require careful coordination. They are reflected in organizational change

> *"The emergence of the CIO is cause for celebration."*

as the three functions are consolidated.

In one respect, the emergence of the CIO is cause for celebration among network managers and their communications staffs. It signifies that information and communications technology are becoming more important to corporate success. Technology management is more visible and more powerful. Sophisticated technology executives have new opportunities for influence and reward within their corporations.

On the other hand, the CIO is usually appointed from the ranks of the MIS staff. These computer-savvy managers understand the information system function, but are often less sure of the role of communications and voice networking. That can be bad news for the communications manager because his new boss may not appreciate network problems.

In many companies, computer and communications managers have been in conflict. They have fought over budget allocations, priorities and project control and recognition, and their fundamentally different views of technology have created problems and aroused suspicions. Communications managers often adopt one of two philosophies. Some see themselves as protectors of the corporate communications cookie jar, while others see themselves as providers of an essential service. Managers espousing the first philosophy look at their job in terms of control; those embracing the second think in terms of service.

The first outlook can put communications managers on the road to ruin. Communications managers who build bureaucracy and raise roadblocks are doomed to frustration and failure.

Technology is not an end in itself, but a tool that helps organizations accomplish business goals and objectives. Regardless of the organizational chart, the communications manager must strive to work with other technology managers. The corporate network must support information and office applications.

Communications managers who help people solve problems and overcome obstacles will be appreciated. Chief information officers need the advice and counsel of competent, professional and supportive communications people. As a result, communications managers who take the time to broaden their skills have a great opportunity.

The communications manager is a potential candidate for the CIO job, which has strict job requirements. Computer and office systems knowledge adds technical breadth, and understanding corporate goals provides business perspective. Most important, the potential CIO candidate must be equally comfortable in the boardroom and the network control center. He is a technology executive able to act as an advocate for communications needs at high organizational levels.

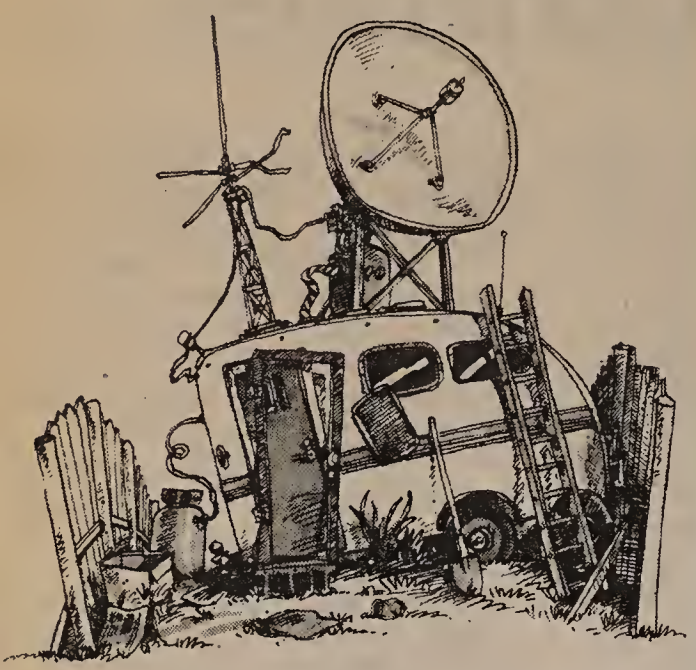
The sharp CIO will come to understand the complexities and problems of communications. Therefore, the CIO should be welcome: It's a concept whose time has come.

Ulrich is president of Walter E. Ulrich Consulting, Inc. in Houston.

NETWORK WORLD

Features

May 12, 1986



Transmission controversy heats up
The radio frequency controversy stews as dish antennas dot the landscape. Community leaders underscore health and environmental concerns while industry executives argue cost. Federal agencies seek to appease both groups with a nationwide standard.
This page.

Rock 'n roll E-mail
Management Communications, Inc. prevents logistical nightmares during worldwide rock tours by providing value-added software and international communications services to link all the supporting casts that cater to stars on the road.
Page 1.

Ambassador Diana Lady Dougan
The outcome of U.S. communications policy mediations affects more than those companies involved. Diana Lady Dougan heads the International Communication and Information Policy Bureau. In that role, she mediates communications issues that impact everything from trade balances to national security.
Page 29.

▶ RADIO FREQUENCY TRANSMISSION

The dish dilemma

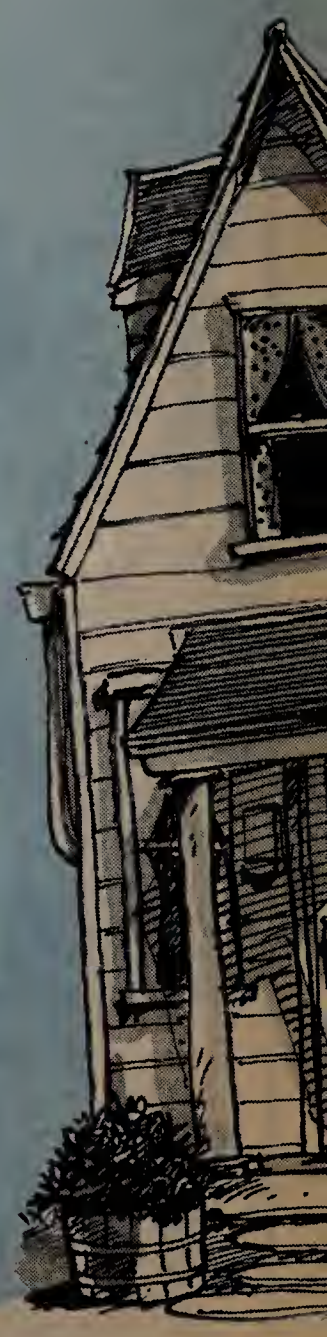
Four agencies are playing mediator in the feud between community leaders and broadcasters. The compromise may be more costly regulations for users.

Frequencies that produce nonionizing radiation

Frequency	Band Designation	Use
3000 GHz		
	Not designated	Not allocated
300 GHz		
	EHF Extremely High Frequency	Satellite communications, Microwave relay, Amateur radio navigation, Radar
30 GHz		
	SHF Super High Frequency	Satellite communications, Radar, Microwave relay
3 GHz		
	UHF Ultra High Frequency	Microwave relay, Amateur radio, Taxi, Police, UHF-TV broadcast
300 MHz		
	VHF Very High Frequency	Amateur radio, Diathermy, VHF-TV broadcast, FM broadcast
30 MHz		
	HF High Frequency	Citizens band, Diathermy
3 MHz		
	MF Medium Frequency	Radio navigation, AM broadcast
300 KHz		
	LF Low Frequency	Radio navigation, Maritime communications
30 KHz		
	VLF Very Low Frequency	Very-long range communications, Navigation, Audible frequencies
3 KHz		
	VF Voice Frequency	Voice, Audible frequencies
300 Hz		
	ELF Extremely Low Frequency	Audible frequencies, Power lines, Submarine communications
30 Hz		

Piccolo
Violin
Flute
Oboe
Human voice
Cello
Bassoon
Tuba
Bass viol

SOURCE: CLAIRE STERN ASSOCIATES, NEW YORK



BY CLAIRE STERN
Special to Network World

Dish antennas are sprouting up on building tops, hilltops, steel towers and residential properties like dandelions. And like the brilliant yellow wildflowers, many people think not about how they got there but about how to get rid of them.

Concern about the presence of dishes raises questions about aesthetics, health hazards and competition between direct satellite broadcast and cable television. Only meager information about radio frequency (RF) transmission has reached the public during the past 45 years. The press reports about satellites only when a controversy erupts over the placement of an antenna. Unaware that transmitting dishes emit RF radiation but receiving dishes do not, the public considers both types of dishes to be potential health hazards.

AT&T, MCI Communications Corp., Raytheon Co. and Home Box Office, Inc. were just a few companies confronted by angry community leaders and local governments that forced the companies away from sites selected for their transmission path capabilities. To guide institutions and individuals in making reasonable judgments, a number of regulatory agencies have incorporated standards into their permit processes.

Society has become dependent on the instant transmission of news, data, information and entertainment. Because of the rapid proliferation of radar, radio, television and microwave telecommunications transmitters, the public's exposure to radiation has increased significantly.

However, regulatory agencies have been cautious to the point of inaction because of the inconclusive research on the effects of RF radiation. Skepticism about the agencies' dedication to the protection of public health has given rise to greater demand for a reasonable standard. Industry, anxious to get on with its communications growth, would benefit more from a single national standard than from varying state or city guidelines.

After considerable study, review and feedback, Federal Communications Commission regulations were amended to address the effects of RF radiation exposure on humans.

Applicants for transmitter construction permits, modifications or license renewals are now required to sign a form stating that the installation will not adversely affect nearby businesses and homes.

Compliance with FCC requirements can sometimes be ensured by fencing the transmitting antenna and by providing signs to warn the public to stay away from the site. Elevating the antenna at the site to avoid direct signal exposure to businesses or residences can be another simple solution.

The FCC has set a standard of 5 milliwatts (mW) per square centimeter as the maximum allowable amount of RF energy that may be emitted in a period of six minutes. The FCC chose to use the same guidelines set by Ansi, which recently made its guidelines more stringent by decreasing the exposure limit from 10 mW to 5 mW. The change in Ansi's stance is likely a response to additional evidence it has received about the dangers of RF radiation.

According to the FCC's Office of Science and Technology, the FCC accepted the Ansi guidelines "because they are scientifically based, widely accepted and applicable to the general population as well as to workers."

In announcing the new environmental rules, the FCC said, "An applicant's diligence and foresight in raising and addressing the RF radiation issue at an early stage in the authorization process may save substantial application processing time and modification expense in the future."

The broadcast industry says it objects to the FCC's imposition of standards, claiming that it causes excessive economic burden. According to the National Association of Broadcasters and the Lawrence Livermore National Laboratory, it will cost the industry an estimated $8 million to $16 million to comply. The Environmental Protection Agency (EPA) estimates the average cost of each FM station's compliance with the FCC regulation is $3,000. The money will pay for modifications such as lowering the power of the transmitter and refiling with the FCC. The greatest expenses are for the lawyers and engineers who are needed to carry out these changes.

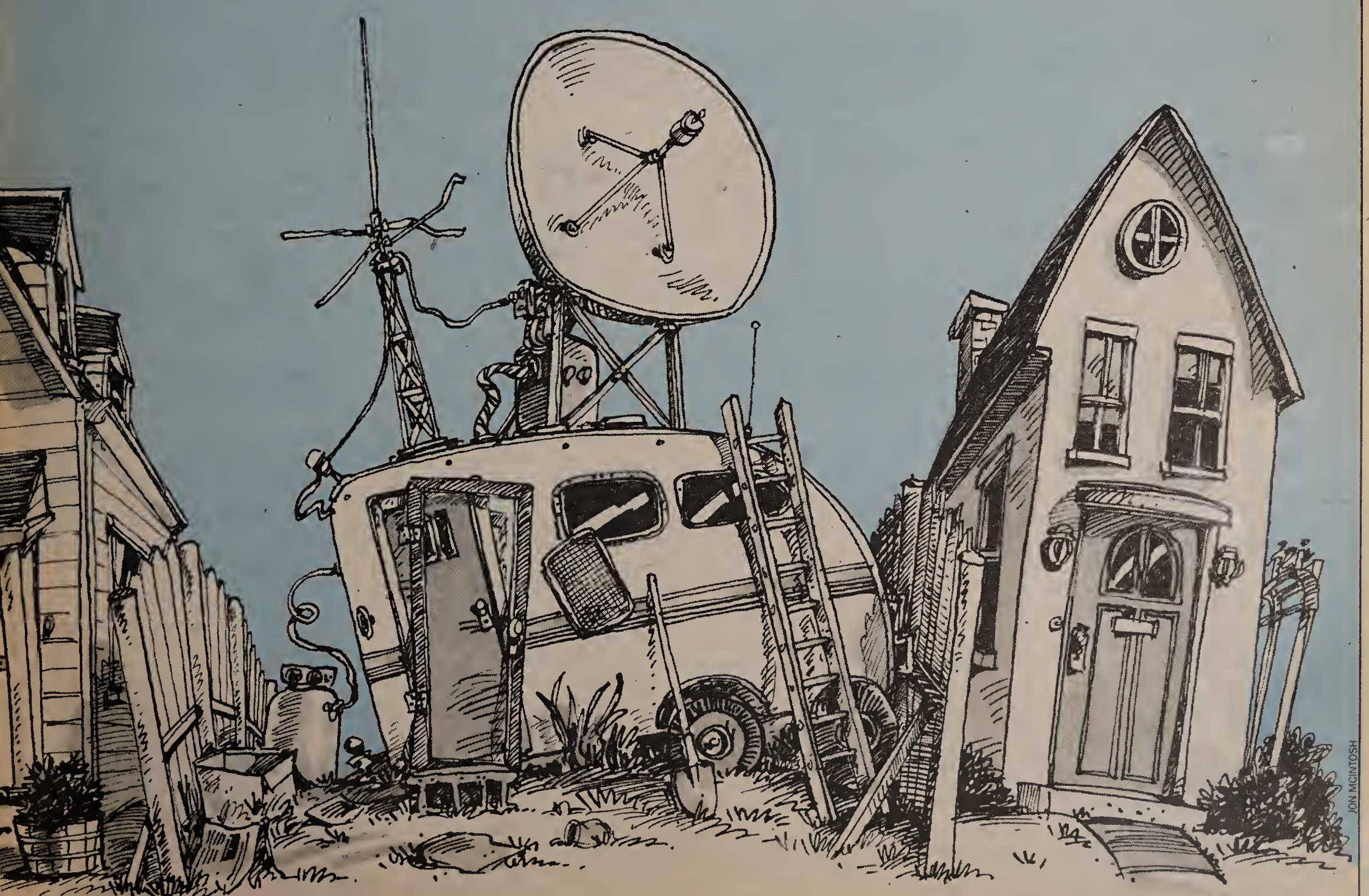
The economic impact on applicants for point-to-point microwave and satellite earth stations, which are also required to comply with this new regulation, will be small.

In addition to the normal application-filing process, the lawyers and engineers will have to spend extra time reviewing the FCC requirement and calculating the energy transmission impact from the applicant's facility.

Only if the environmental impact is

Continued on **page 26**

Stern is president of Claire Stern Associates, a New York-based consulting firm specializing in governmental relations, site and right-of-way studies, community relations and market studies.



JON MCINTOSH

From **page 25**
excessive and a public group brings action against the applicant, or if the FCC perceives this as a serious environmental hazard, will a complete environmental impact analysis be required.

Because antenna farms create an aggregate of RF sources, the total amount of energy absorbed by the body from all sources must be measured.

If the amount is excessive, then either all of the users involved will have to cooperate with the lowered limits, or the last antenna in will have to be the first one out. Each situation is evaluated individually.

Real estate developers who see their buildings' rooftops as a new source of revenue may be caught off guard by this FCC rule. Broadcasters used this technique of clustering antennas when the major requirement for getting an FCC license included assurance of a clear transmission path. No environmental impact analysis of the possible health risks was required, and, in fact, collocation was encouraged to minimize hazards to aircraft. The FCC now monitors the clustering of FM and UHF broadcast transmitters.

The basis of the FCC's action is the National Environmental Policy Act of 1969, which directs all federal agencies to consider whether the authorized equipment and operations will significantly affect the quality of the environment.

> *"The EPA provides standards for RF radiation partly because of the greater vulnerability of children and pregnant women. It recently proposed an absorption rate of .4 W per kilogram at lower frequencies."*

Federal agencies that currently do not participate in this type of review are the EPA, which is responsible for the general public; the Occupational Safety and Health Administration (Osha), which is responsible for the safety of workers; and the National Institute for Occupational Safety and Health (Niosh), which is responsible for providing the scientific basis for Osha's regulations.

Representatives of all of these agencies originally met as an interagency task force, but in 1982 they stopped the exchange as a result of the deregulatory atmosphere of the Reagan administration.

Each agency eventually retreated into its own internal review and discussion.

The EPA provides protective standards for RF radiation, partly because of the greater vulnerability of children, pregnant women and the elderly. The EPA recently proposed recommendations for a specific absorption rate of .4 W per kilogram at lower frequencies and of 0.8 W per kilogram at higher frequencies.

All the standards are frequency-dependent, which means that absorption depends on the frequency level. These standards recommendations are pending final sign off by EPA administration.

Niosh has not proposed any standards itself but follows Ansi standards that are supposed to protect the work force. Osha has approved the former Ansi standard of 10 mW per centimeter at lower frequencies.

During the past three years, some local governments, such as those of San Diego and Multnomah County, Ore., became tired of waiting for federal standards and took the matter into its own hands to protect the general population from RF radiation. During the same period, more and more state governments also implemented their own standards. Some states, such as Connecticut and New Jersey, used the Ansi guidelines; others, like Massachusetts, were more stringent.

In 1983, Massachusetts became one of the first states to pass its own RF regulations. Its requirements are five times more restrictive than Ansi's, permitting only 1mW of emitted energy per square centimeter.

In November 1985, the Massachusetts Department of Labor and Industries added a regulation to prevent possible harmful occupational exposure of employees to electromagnetic radiation in the frequency range of 10 KHz to 100 GHz. The department requests extensive documentation from applicants, but will accept a copy of the FCC construction permit in lieu of its own submission requirements.

Broadcasters and transmitters of information require an expanding transmission capability as the gross national product of the U.S. shifts from manufacturing to the information industry.

There is an increasing need for accurate information to correct the misconceptions commonly held by the public and by industry. Both must be kept informed of new developments as the RF radiation controversy continues.

▶ RF RADIATION

The invisible health hazard?

In the fracas over the health effects of radio frequencies, the culprit that's causing problems for the communications industry is nonionizing radiation emitted when microwave, satellite, radio and television signals are sent from stationary broadcast equipment.

Nonionizing radiation is the electromagnetic radiation resulting from transmission of a signal at frequencies between 30 Hz and 300 GHz. These frequencies span the spectrum from a low-frequency power line to high-frequency radar, and they are most likely to be absorbed by the human body.

Lower frequencies with longer wavelengths produce smaller levels of energy per unit of radiation. The higher the frequency, the shorter the wavelength, producing stronger levels of energy per unit of radiation.

The engineering design for transmitters takes into consideration the length of the transmission path, the size of the antenna, the operating frequency and the amount of power required to send the signal. A low-frequency transmission system antenna may operate at high power, which could produce a higher level of nonionizing radiation than a high-frequency transmission system operating at low power. Because of this, standards are stated in terms of body exposure to levels of power density, which must be calculated for each system design.

Standards are based on scientific evidence and subjective perceptions of risk analysis. Concern about the biological effects of nonionizing radiation and the regulation of human exposure to it focuses on frequencies from 300 KHz to 100 GHz.

Biological impact

Direct exposure to the source of energy is responsible for the harmful effects of radio frequency radiation. Absorption of electromagnetic radiation can vary according to changing circumstances. Environmental temperature and humidity can mitigate or exaggerate the thermal effects of certain power density exposures. A person's length of exposure, body angle in relation to the source of radiation or health can change the biological impact.

Nonionizing radiation can raise core body temperatures without any noticeable heat or pain. Symptoms may occur before the victim is even aware of exposure. The heating capabilities of radio frequency can also be used medically.

If a person's eyes are directly exposed to high-intensity radiation, changes in the lens and the retina can occur. Specific eye conditions that can develop are cataracts and opacity, which is an opaque spot that forms on the lens. The condition may be temporary or permanent, depending on the duration or frequency of exposures at certain power densities.

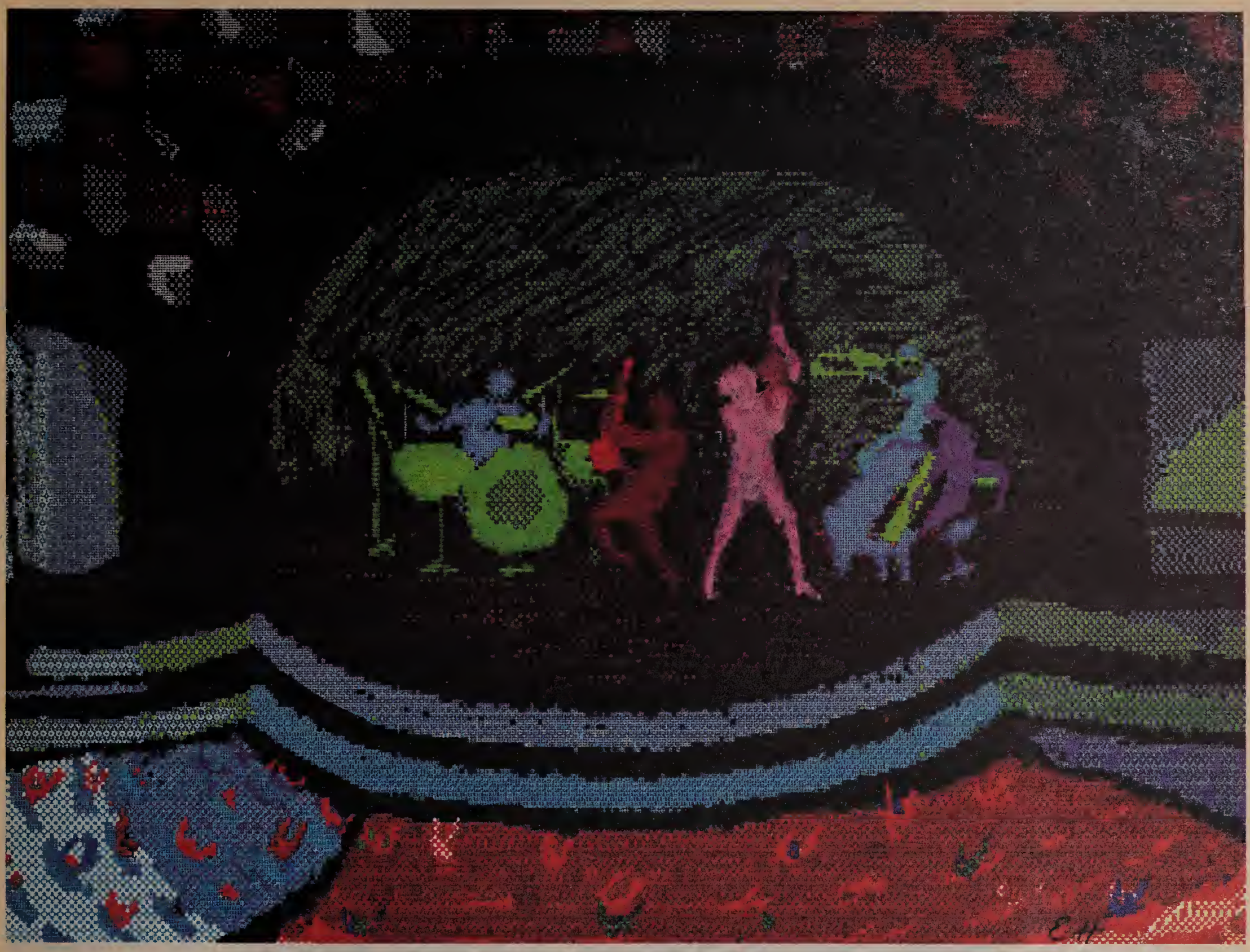
Exposure to radio frequency radiation increases the temperatures in laboratory animals and reduces reproductive efficiency, which can range from temporary loss of effective sperm to permanent sterility. The permanence of the damage is directly related to the increase in temperature. High body temperatures in pregnant laboratory animals caused by any agent, including radio frequency radiation, are associated with birth defects and miscarriages.

Research on laboratory animals indicates that there are definite health risks to living organisms related to radio frequency radiation. The controversy continues, however, as to whether the results of studies done on laboratory animals are applicable to humans.

There is no longer any question about the hazards that result from long-term or repetitive exposure to nonionizing radiation. The Federal Communications Commission has recognized the evidence of the potential threat to human health. Although the FCC does not have its own scientific and medical research staff, it has worked with other government agencies before taking this first reasonable step toward implementing Ansi guidelines without placing burdens of compliance on applicants.

All federal agencies are mandated by the National Environmental Protection Act to consider the environmental and economic impact of the activities they regulate. Recognizing that nonionizing radiation is not benign, the FCC amended its rules and regulations to place the responsibility for controlling radio frequency radiation on broadcasters. The Occupational Safety and Health Administration continues on a holding pattern, letting other agencies take the lead in protecting the work force from damaging radiation. If the bureaucratic process runs smoothly, the EPA recommendations on radio frequency radiation will become national standards by 1987.

— Claire Stern



▶ CONTINUED FROM PAGE 1

Rock 'n roll E-mail

"Managers of entertainment acts use the International Management network for long-distance communications."

unique communications problems of rock bands on tour.

Dialcom Plus is International Management's enhanced version of electronic mail software developed by New York-based Dialcom Service, which is owned by British Telecom. International Management's software acts as a front end to the Dialcom service.

The fledgling company's first customers were major rock artists, but the NBC, CBS and ABC television networks, as well as several record companies, have also purchased International Management's electronic mail services.

> *"The fledgling company's first customers were rock artists."*

Managers of entertainment acts use the International Management network for long-distance communications between company headquarters and remote offices during international tours. They also use the network to communicate with support organizations such as trucking, lighting and sound equipment companies before the tour begins.

Managers for the entertainment industry often spend several months abroad every year. Travelers used to drag communications equipment from foreign hotel to hotel and rely on slow Telex Service technology, often operating at 50 bit/sec, for international communications. With International Management's system, travelers can replace Telex with an international electronic mail service designed for their communications needs.

The International Management network comprises three Prime Computer, Inc. mainframes in Los Angeles, London and Sydney, Australia. Public data networks in 17 countries relay information from the user located outside the U.S. to Tymnet, Inc. or Telenet, Inc. packet-switching services in the U.S. These value-added networks then carry the information to the user's home office.

International Management also serves users in the U.S. that need to communicate with locations outside of U.S. boundaries. The company supports computers using the Ascii transmission code over asynchronous modems. A user logging into Dialcom receives a single prompt. In comparison, Dialcom Plus presents users with a series of different screen menus and help messages that

Continued on **page 28**

From **page 27**
guide the user through the system.

International Management President Don Singleton says that the simplified software educates the user on how to access network services.

"Training was an enormous problem," says Bridget Thexton, International Management sales and marketing director and a veteran of the Dialcom sales group. "One of the major impediments to installing any new technology is the expense of running around and training everybody to use it," she says. Cities with system support personnel include Sydney, Tokyo, London, Amsterdam and Frankfurt, West Germany.

> *"Singleton first discussed the concept of international E-mail service with a member of the Rolling Stones' tour staff."*

To construct this international electronic mail communications network, International Management had to deal with the Postal Telephone and Telegraph in each foreign nation where the system would be located.

Instead of setting up shop and competing with each country's PTT for international traffic, International Management opted to license its E-mail software to each PTT exclusively. Software licensees include England, West Germany, the Netherlands, Denmark, Ireland, Australia, Canada and Japan. According to Singleton, 50% of International Management's business is in the U.S., and 25% to 30% is in the U.K.

Singleton was the first user of Dialcom software during a Westinghouse Electric Corp. pilot project in 1979. Dialcom allowed Singleton, working from a hotel room in Bahrain, United Arab Emirates, to communicate with the home office in Pittsburgh.

After leaving Westinghouse in 1981, Singleton founded International Management with a charter to resell Dialcom software to the entertainment industry. With only 13 employees, the company grossed just over $1 million in 1985 and expects to bring in more than $2.5 million in 1986.

Singleton first discussed the concept of using an international E-mail service with a member of the Rolling Stones' tour staff. Shortly thereafter, the service was enthusiastically received as the cure for several major bands' logistical nightmares.

"When a major-league rock and roll band goes on tour, they take roughly 100 people with them, and they don't stay in Holiday Inns," Singleton explains.

"[The rock and roll bands] loved the idea because they are so mobile and have so much money to keep track of."

As Singleton was introduced around the rock and roll industry, he came in contact with many performing artists, including David Bowie, Joe Jackson, Elton John and the members of Genesis.

Rock band artist managers do the lion's share of the planning for their bands' international concert tours.

"The artist managers loved [the service]," Singleton says. "They started using the service to support communications between the concert tour's headquarters and the band's home office."

An artist manager's entourage usually is comprised of about 10 people. Before International Management came along, the artist manager hired a tour manager who, in turn, hired all the companies needed to support a worldwide rock tour.

"The tour manager was constantly on the phone trying to hire as many as 30 organizations for a three- to four-month period," Singleton notes.

Singleton credits the artist managers for the success of his business. "First, they wanted their bands' booking agents on the network," he says.

"Then they wanted concert promoters, trucking companies, lighting companies, travel agents and accountants hooked to the system."

Eventually, the artist managers wanted every company involved with their bands' tour to have an electronic mailbox on the network.

These events fell in line with Dialcom's initial marketing plan, according to International Management's Thexton. In 1985, Dialcom began work on a marketing plan designed to attract value-added resellers to license their electronic mail software, add features to it and resell it to a particular market segment. Until this point, the software's success had been limited to the federal government and Westinghouse.

Thexton says value-added resellers constitute the largest growing community using Dialcom electronic mail software.

"They have a higher spend rate per electronic mailbox than corporations," she explains, adding that they are on the system longer and more frequently than corporations.

Working with value-added resellers in the entertainment industry to expand the cornucopia of services on the network requires little effort on Dialcom's part, Thexton adds.

"All Dialcom has to do is say, 'Here is the contract and here are the [electronic-mail network mailboxes], do whatever you want with them.' "

Value-added resellers have at least one of their own computers on which the Dialcom software is located, she explains. The value-added resellers tailor their own software to meet the needs of a specific market. Thexton said that value-added resellers also market customized software without the assistance of Dialcom. These markets include nonprofit agencies and the legal and medical markets.

Thexton says it's International Management's job to help companies make a smooth transition from Telex to electronic mail. Using an electronic-mail service to bridge nations eliminates problems a communications user would normally experience when calling a location in a different time zone. International Management's support staff works with the PTT representatives of foreign countries to set up the user's electronic mail box before he arrives.

> *"The service was enthusiastically received as the cure for several major bands' logistical nightmares."*

This eliminates weeks of bureaucratic headaches for the customer. The company's support staff provides users with a modem designed to work with the country's telecommunications system.

A key ingredient to International Management's success has been the proliferation of portable personal computers. When Singleton first used electronic mail technology in 1981, he had to lug a terminal, disk drive, printer and modem along with him.

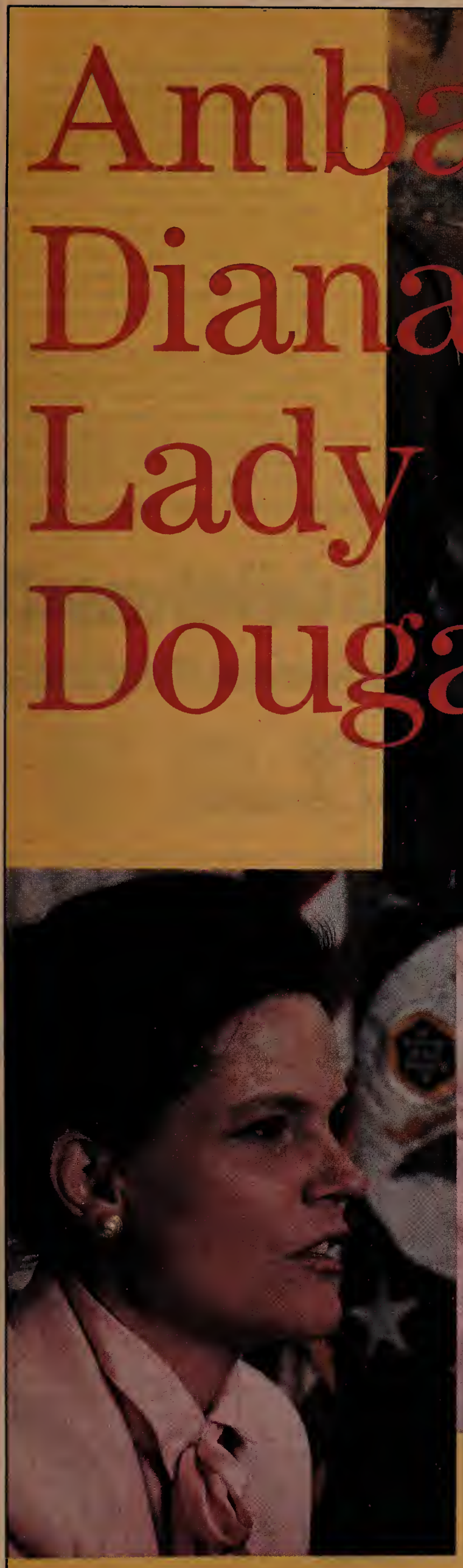
"The European modems were as large as the terminals," he reflects. Despite the equipment hassles and the 30 minutes needed to set up the gear, Singleton claims electronic mail technology made his efforts worthwhile.

Although International Management's target customers are entertainment companies, Singleton says the company will offer consulting services to large corporations that seek to establish communications with locations outside the U.S. "Corporations are very interested in switching from Telex to E-mail services using personal computers," he asserts.

One International Management client outside the entertainment industry is soft drink titan Pepsico, Inc. International Management has worked with Pepsico to help it explore hooking its overseas workers to Dialcom's electronic mail system.

This is the beginning of Singleton's goal to take International Management's services beyond entertainment and into corporate communications. It is a goal that may seem far-reaching, but it might just answer the question: Where does a company go once it has reached the stars? Z

Ambassador Diana Lady Dougan



"Most of our foreign trading partners are better versed about the U.S. than we are about them."

BY MARGIE SEMILOF
Senior Writer

The communications manager of an international network is little more than a juggler when it comes to keeping track of proliferating U.S. and foreign regulations that affect the flow of information.

Managers who implement newfangled communications technologies are finding that new methods of communications can alter traditional patterns of transborder data transfer. This can, in turn, affect sensitive issues of global trade and politics. Foreign countries are reacting by setting up their own rules to control information passing across their borders, and communications managers are stuck trying to understand and straighten out the whole regulation mess.

Many federal agencies regulate information transfer. But the job of bridging U.S. telecommunications policy with that of foreign governments and making the material available to U.S. companies falls on the desk of Ambassador Diana Lady Dougan at the International Communication and Information Policy Bureau.

The Reagan Administration appointed Dougan to set up the bureau at the Department of State following the dismantling of the White House-run Office of Telecommunications Policy. A self-described "policy junkie," Dougan held a number of positions involving telecommunications policy and administration prior to her State Department appointment. Most recently, she was director of the Corporation for Public Broadcasting.

Continued on **page 30**

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Dougan has also served as cable television marketing and promotion director for Time, Inc. and has produced a number of television programs, including the Peabody award-winning show: "The MX Debate."

As the first coordinator for the newly formed bureau, Dougan serves at the same level as an assistant secretary of state and is the bureau's principal liaison to the private sector.

Communications- and information-related services and equipment are the third largest export in the U.S. Negotiations with world telecommunications policy makers must be carefully balanced, as any settlement can affect not only the economy and trade balance, but national security and defense as well.

Dougan's International Communication and Information Policy Bureau works closely with more than 14 federal agencies to help referee transborder information transfer. Dougan recently spoke with Network World *senior writer Margie Semilof.*

What is the purpose of the International Communication and Information Policy Bureau?
We have the job of bringing together the disparate interests of about 14 agencies, including [the National Aeronautics and Space Administration], the FCC, the Department of Defense, the [Central Intelligence Agency] and the departments of state and commerce. Each party has legitimate competing goals.

We also translate and extrapolate domestic policies and goals into international realities. What may work at home under the FCC rules may not work abroad. We must make a better fit between our approach and [the approach of] others.

> *"It behooves U.S. companies to look beyond their own borders."*

There is a unique challenge in the U.S. because the FCC is not part of the executive branch, but is an independent agency that is not subject to presidential veto. It would be inappropriate for [the FCC] to be making foreign policy decisions, yet some of its decisions affect foreign policy.

Why should communications managers know or care about your bureau?
Anyone in the communications industry or in international business knows that international and domestic borders are disappearing. Communications is global in nature. It behooves U.S. companies to look beyond their own borders.

When does communications policy become information policy?
By blending communications and information policy, Congress recognized the merging of the common carrier industry and the computer industry — and to some degree, the broadcast industry. Negotiation in one area should not impair negotiation in another area.

> *"We translate and extrapolate domestic policies and goals into international realities. What may work at home under the FCC rules may not work abroad."*

How do changing international standards affect global trade?
Companies looking for market opportunities abroad must recognize the change in international standards to compete effectively with foreign companies.

Most of our foreign trading partners are better versed about the U.S. than we are about them.

U.S. companies are too dismissive of Third World markets. This is in part caused by the competition at home that is created by deregulation.

Countries such as Japan, Canada, West Germany and France are pursuing these Third World markets because they are the markets of tomorrow, although they may appear to be marginal today.

We must come to a multilateral

agreement with standards. We cannot and do not want to live in splendid isolation.

Are fears still valid about other governments restricting transborder data flow?
In practice, there are not as many barriers as originally feared. This does not mean we should be complacent about the subject. There are still issues of copyright, liability and piracy that will not go away.

There is a general public acceptance in most countries to respect the mail.

But when you try to transmit electronically, the level of policy concern and fear takes a quantum leap. These fears are not without good reason. Electronic transmission provides information that is instantaneous and more accessible to people and institutions than it would otherwise be.

> *"It will be interesting to see what technology will do to the Soviet Union, especially in areas of defense. The debate about how much technology it will allow is increasing."*

It will be interesting to see what technology will do to the Soviet Union, especially in areas of defense. The debate about how much technology it will allow is increasing. The Soviets know they must become more high-tech literate, but they don't even allow people to have typewriters or duplicating equipment.

Have you ever intervened in a dispute between a foreign country and a U.S. business over information transfer?
I'm not really comfortable with the term intervened. Most barriers of information flow come in the context of trade. We try to help out when a company has a specific problem. But as a policy office, we try to deal with generic issues.

It is in every country's interest to open up its markets and reduce information flow barriers. But then we will run into problems of who will pay for integrated services digital network. Who will benefit?

What characterizes an emergency in this office?
It may be a rash of protectionist legislation or an instant restriction by another country.

In some multilateral negotiations, if you shove a comma or a few words around, it makes a real difference — economically and politically. As a policy office, we try to look to longer range issues and build an environment that supports our goals.

Will ISDN aggravate the problems of information-flow regulation?
The concept of the ultimate communications faucet has opportunities and dangers. For one thing, every country does not define ISDN the same way. In Europe, ISDN has become more of an economic and political issue than a technical issue. The U.S. has focused on the technical side because of our monopoly vs. nonmonopoly approach.

In most developed countries, the information industry is not government-owned. Foreign phone systems are usually under government control. Therefore, the common carrier monopoly has a chance to garner in the information industry.

> *"Every country does not define ISDN the same way."*

But the trend to privatize the European switched network is not as far along as people think. In fact, I do not share the optimism of those who see a mass trend in privatization. I think there is more room for change in enhanced services.

We will get to ISDN based on marketplace need. The U.S. often comes across as being oversimplistic and overzealous in its marketplace forces. The European countries seem to be approaching [ISDN] from a theoretical view and working backward to the practical. We should put more of the emphasis [of ISDN] on the end user of communications.

▶ MANAGEMENT

Technophobia

Fear of new technologies may be keeping some companies from making the most of their networks.

BY NADINE WANDZILAK
Staff Writer

Fear of new communications technologies may be keeping some managers — particularly voice communications managers — from making their systems more effective.

"Management is leery of new technology," said John E. Dulfer, president of Telecom Planning, a consulting company in Melbourne Beach, Fla. "My clients say, 'let's not be too blue sky. Will it work?' " Dulfer said he has been "trained by clients to take a conservative approach" to emerging communications technologies.

William G. Hooper, director of telecommunications consulting services for St. Louis, Mo.-based Price Waterhouse & Co., agreed. "Most people have problems assimilating new technology," Hooper said. Many end users resist new technology, he added. "They won't use it unless they can see a benefit, unless they can see that it makes their jobs easier or reduces costs. Telecommunications managers will not introduce technology for the sake of technology alone."

According to Michael C. Dodson, senior consultant with Doug Arnold & Associates, Inc. in Garland, Texas, most sophisticated communications managers are aware of the capabilities available in new technologies. "But they don't know how to implement them," he said. "They're very apprehensive at the start about choosing a new system. They worry about its cost and the way it will work."

"We're told right up front how a client feels about technology," said Fred Chanowski, president of Telecommunications Management Corp. in Dedham, Mass. "Some clients will tell you that they're more concerned with guarantees than any sophisticated features — even clients who say they want to be technologically innovative and avant-garde." Chanowski works with companies that support 1,000 or more lines.

"It is a tremendous problem to identify what's real and what's available only on paper," Chanowski added.

He said getting accurate feedback about a new product is difficult because users are reluctant to say anything negative. Company size and system performance are issues that must be considered when opting for new technology, Chanowski said. "For example, software that works perfectly for a mid-size user may cause problems for a larger company," he said.

The anxiety felt by many smaller companies' communications managers is similar to that experienced by managers of large communications networks during the breakup of the Bell System, according to George Grove, president of Grove Associates in Atlanta. "Users with fewer than 100 lines and without in-house expertise are pretty confused now that technology has sunk down to their level," he said.

Compared with their voice counterparts, data communications managers are much more inclined to experiment with new technology, Chanowski said. "People who take chances with voice communications technologies often come from data management departments where voice is now under data communications," he said.

> *"Getting accurate feedback about a new product is difficult."*

"Data managers are used to changing technology," Hooper said. "They grew up with it. Telecommunications managers lived with Bell for 106 years. Only in the last five years have they had to exercise their own judgment. Some aren't equipped to handle that."

Some telecommunications managers in small to mid-size companies "talk to vendors, listen and buy, spending twice as much as they should," Hooper added. "In some cases, they don't get what they need." One of his clients followed a vendor's suggestion and spent $30,000 for a feature that Hooper said the company will probably never use on its new private branch exchange.

Data processing types, in comparison, look first at technology and then at the bottom line, according to Dodson of Doug Arnold & Associates. Voice managers more often look at technology as an expense, he said.

Often, companies with very old equipment want to replace it with state-of-the art technology, according to Mary J. Blessing of TelCon Associates in Overland Park, Kan. She said her small PBX clients are usually not eager to try new technology for its own sake. But they hope that a state-of-the-art system will mean fewer changes in the future. "They plan to keep the new system as long as they had their old system," she said.

Telecommunications managers worry about losing their jobs for making a "catastrophic" mistake, Chanowski said. But some are willing to take risks. "Information resources make you competitive," he added. "If you don't take risks, you can't stay up with the competition."

▶ CONFERENCES

IBM standards chief to speak at June meet

Holleman to address IBM standards role.

BY MICHAEL FAHEY
Staff Writer

BOSTON — Richard J. Holleman, corporate director of standards practices at IBM, will be the keynote speaker at the Network Management/Technical Control Conference and Exposition, which will be held June 9 through June 12 at the World Trade Center here.

Holleman will address the future impact of network management standards on IBM's Systems Network Architecture in his speech on Wednesday, June 11 at 8:30 a.m.

In addition, Holleman will discuss IBM's plans to help users control multivendor networks through national and international standards.

He will also outline IBM's contributions to national and international standards-making efforts.

The Network Management/Technical Control Conference and Exposition is part of a three-city tour designed to address the problems of network users in Fortune 1,000 companies.

The event is sponsored by CW/Conference Management Group, a division of CW Communications, Inc.

The Conference Management Group also sponsors the Washington, D.C.-based Communications Networks show and conference.

BOC Services from **page 22**

customers who know their communications needs in advance, but whose needs vary depending on the time of day, day of the week or time of year. A customer may need to talk to someone in another office for two hours every Friday morning for three months, for example. Or perhaps data must be sent every other evening at a certain time. These connections can easily be guaranteed for the customer who makes reservations.

During the day, many business customers have active, on-line terminal traffic or need network capacity for teleconferences. At night, there is often off-line activity such as updating inventory, transferring records and generating reports.

Using the reservation service, customers do not have to lease dedicated lines full-time. Instead, they can lease dedicated lines into the reservation network, then lease network capacity based on time of day. They pay only for the interoffice capacity they use, which reduces their costs.

In addition to point-to-point service requests, customers can set up their own conferences, including both symmetric and broadcast conference calls. Symmetric allows all callers to talk to one another, and new callers can be added to the conference while it is in progress. A broadcast call allows one caller to moderate the conference, much like a formal meeting. The other callers can talk only to the moderator, but the position of leader can be passed on to other callers during the conference. Both types of calls can be reserved ahead of time.

Customers become monitors

Flexcom also offers system administration capabilities to businesses. An optional graphics package is available for those who want to monitor the usage of their networks.

Users can see how the network is configured at any time, how it is being used, which times have the heaviest and lightest usage, what types of scheduling conflicts are occurring, how they can resolve these conflicts, and whether it is time to add new capacity to the network. Customers can call up this information in seconds on their local terminal or print it out in standard report formats.

A multilevel security system that is built into the service can be defined in different ways as needs dictate. The system is flexible enough to allow a telephone company to give different sets of capabilities to its personnel and to its customers. Complete privacy is assured at all times.

Plans for future Flexcom features include automatic facility reconfiguration to restore service in the event of facility failure, expansion of customer control to additional intelligent network elements such as packet-switching systems and accommodation of higher network transmission rates.

So, put down your wire cutters, and take two aspirin and a deep breath. Help is on the way.

NETWORK WORLD

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1 My primary areas of activity. Circle ONE only.

I am involved in evaluating communications (data, voice and /or image) products and services:

1. for *use within my own* company/organization
2. for *resale* to other companies/organizations
3. Both

1a For communications, my primary responsibility is: Circle ONE only.

1. Data Communications
2. Voice Communications
3. Both

2 Circle only the ONE title classification which most applies to you.

Company Management

11. Chairman, Pres., Owner, Gen. Mgr., Partner, Director, CIO, VP, Dir. Head of Finance, Admin. Procurement

Communications Management

Data Communications

21. Management
VP, Dir., Mgr., Head, Chief: Data Communications, including Networks, Engineering, Design, R&D, Application Development
22. Supervisory/Staff
Supervisor, Head : Networking, Design, Analysis, Engineering, R&D, Applications, Services

Telecommunications

31. Management
VP, Dir., Mgr., Head, Chief: Telecomm., Voice Comm., including Networks. Engineering, Design, R&D, Application Development
32. Supervisory/Staff
Supervisor, Head: Networks, Design, Analysis, Engineering, R&D, Applications Services

Factory Communications

41. Management
42. Supervisory/Staff

MIS/Data Processing

51. Management
VP, Dir., Mgr., Head, Chief: MIS/DP, Systems Application Development, Operations, Office Automation
52. Supervisory/Staff: Supervisor, Head of System Design, Analysis, Applications

Others

75. Consultant
80. Educator
85. Financial Analyst
90. Marketing/Sales
95. Other _____

3 Job Function

Which one of the following best describes your functional involvement with communications (data, voice, and/or video) products? Circle ONE only.

Corporate

1. Business Management, Planning and/or Development

Communications System/Network

2. Management, Planning and/or Development
3. Implementation and/or Operation
4. Other _____

4 Which one of the following best describes the primary business activity of your organization at this location? Circle ONE only.

Consultants

11. DP/Communications Consulting Services
12. Consulting Services (except DP/Communications)

End Users

13. Manufacturer (other than computer/communications)
22. Finance/Banking/Insurance/Real Estate
23. Education
24. Medicine/Law
25. Wholesale/Retail Trade
26. Public Utility/Transportation
27. Mining/Construction/Petroleum Refining/ Agriculture/Forestry
28. Business Services (excluding DP/Communications)
29. Government: Federal
30. Government: State/Local

Vendors

41. Carrier: including AT&T, BOCs, Independent Telcos, Public Data Networks, Intern'l Records Carriers
42. Interconnect
43. Manufacturer Computer/Communications Equipment
44. Value Added Reseller (VAR), Systems House, Systems Integrator
45. Distributor
46. DP/Communications Services (excluding consulting)
95. Other _____

5 In which ways do you typically become involved in acquiring communications products (data, voice, and/or video) and services? Circle ALL that apply.

1. Recommend/Specify
2. Identify/Evaluate Potential Vendors
3. Approve the Acquisition
4. None of the Above

6 Check ALL that apply in columns A and B.

A. I am personally involved in the acquisition process (specification, selection, approval) for the following products and services:

B. These products and services are presently in use at this location:

A	B	*Product/Services*
		Computers
☐	☐	01. Micros
☐	☐	02. Minis
☐	☐	03. Mainframes
		Data Communications
☐	☐	04. Communications Processors
☐	☐	05. Comm./Networks Software
☐	☐	06. Digital Switching Equipment
☐	☐	07. Facsimile
☐	☐	08. Modems
☐	☐	09. Multiplexers
☐	☐	10. Protocol Converters
☐	☐	11. Network Mgmt. & Control
☐	☐	12. Test Equipment
☐	☐	13. 3270 Controllers
		Telecommunications
☐	☐	14. PBXs
☐	☐	15. Key Systems
☐	☐	16. Central Office Equipment
☐	☐	17. Integrated Voice/Data Terminals

A	B	*Product/Services*
		Transmission/Network Services Equipment
☐	☐	18. Microwave
☐	☐	19. Satellite Earth Stations
☐	☐	20. Local Area Networks
☐	☐	21. Wide Area Networks
☐	☐	22. Packet Switching Equipment
☐	☐	23. Fiber Optic Equipment
		Communications Services
☐	☐	24. Packet Switching Services
☐	☐	25. Cellular Mobile Radio Services
☐	☐	26. Electronic Mail
☐	☐	27. Enhanced Services
☐	☐	28. Centrex

7 Estimated value of communications systems, equipment and services:

A. which you helped specify, recommend or approve in *last* 12 months? Check only ONE in column A.

B. which you plan to specify, recommend or approve in *next* 12 months? Check only ONE in column B.

A	B		A	B	
☐	☐	1. Over 10 million	☐	☐	6. $100,000-250,000
☐	☐	2. $5-10 million	☐	☐	7. $50,000-100,000
☐	☐	3. $1-5 million	☐	☐	8. Under 50,000
☐	☐	4. $500,000-1 million	☐	☐	9. Don't know
☐	☐	5. $250,000-500,000			

8 Estimated gross annual revenues for your entire company/institution:

Circle only ONE.

1. Over $1 billion
2. $100 million to $1 billion
3. $5 million to $100 million
4. Under $5 million

9 Estimated number of total employees at this location:

Circle only ONE.

1. Over 5,000
2. 1,000-4,999
3. 500-999
4. 250-499
5. 100-249
6. 50-99
7. 20-49
8. 1-19

3A05-36

NWW1

THANK YOU!

PLEASE TAPE HERE

FOLD HERE AND MAIL TODAY

STOP. Did you do the following:

1. Supply old and new address if address has changed
2. Answer all questions
3. Sign and date form

THANK YOU.

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▶ INDUSTRY VIEW

Those sales dip blues

BY MARY PETROSKY
West Coast Correspondent

SAN FRANCISCO — The move by many corporate users away from technological innovation and toward integration of existing computer and telecommunications equipment has spelled trouble for many communications vendors. That was the message of financial analysts at Hambrecht & Quist, Inc.'s 14th Annual Technology Conference held here last week.

One reason for the current industry slowdown is that users aren't yet convinced that the benefits of sharing information outweigh the costs of networking, Alice Bradie said in an interview with *Network World*. Bradie is senior technology analyst of telecommunications with Hambrecht & Quist. Not only are sales soft, but vendors find themselves in a crowded, rapidly changing market, she said.

"Virtually all aspects of computers and data communications have changed," William Norred, president of Micom Systems, Inc., told analysts. "Vendors are being buffeted by evolving technology on one hand and a changing regulatory environment on the other." Micom was one of a variety of high-technology companies that participated in the conference.

Norred blamed slow growth in the local-area network portion of Micom's business for the company's recently reported dip in sales. Sales for the fourth quarter of fiscal 1986 were down some 9% from the same period last year.

The Simi Valley, Calif., company has seen a shift toward cable-based local nets and away from local-area networks based on data private branch exchanges such as those Micom offers, Norred said. Although he expects little growth in data PBXs, Norred said Micom will be introducing a low-cost unit to be sold through distributors.

David Leeson, chairman and chief executive officer of California Microwave, Inc., said he anticipates a coming growth period in the telecommunications market. However, the recent past "has been a very unsettled time in the market for products like ours," he said. Changes in the marketplace are reflected in the Sunnyvale, Calif.-based company's balance sheet: Approximately 60% of California Microwave's current revenue is derived from products introduced in the last three years, said Lesson.

Hambrecht & Quist's Bradie estimated there are now 400 companies involved in the data communications business. "There has yet to be a shakeout in this industry, but it's bound to happen," said Bradie.

Survival pressures are forcing companies to focus their product strategies more tightly. Micom will be putting increased emphasis on microcomputer products, Norred said. California Microwave's long-term strategy is to look for carefully differentiated market segments to pursue, and to avoid head-to-head competition with major vendors such as AT&T, Leeson said.

Vendors are also looking for new market opportunities. "The buzzword in telecommunications today is 'solutions,' " Bradie said. "Everybody's jumping on the bandwagon of interconnectivity." The growing demand for connectivity won't lead to specific product offerings, but rather to the rise of the systems integrator, Hambrecht & Quist analyst Osman Eralp said.

▶ MULTIVENDOR NETWORKS

Interface chasm bridged

Cullinet, DEC pact bears Vida fruit.

BY JIM BROWN
New Products Editor

NASHUA, N.H. — Digital Equipment Corp. last week introduced software that allows users of its VAX family of minicomputers to access and download data from IBM mainframes outfitted with Cullinet Software, Inc.'s Information Center Management System (ICMS).

DEC's Vida software interfaces with ICMS to allow VAX end users to query and download transparently information residing on IBM mainframes running under IBM's MVS operating system. DEC officials said last week the company is continuing to work on enhancements that will add uploading capabilities and compatibility with other operating systems.

The Vida introduction was the fruit of a 1984 joint development agreement DEC inked with Cullinet.

DEC became the second manufacturer of minicomputers to supply ICMS-compatible software. Data General Corp. introduced an ICMS link from its Comprehensive Electronic Office software last year. Wang Laboratories, Inc., Hewlett-Packard Co. and Prime Computer, Inc. — all of which have joined forces with Cullinet — are expected to follow suit by introducing ICMS-compatible packages.

Vida resides on the VAX, where it automatically detects requests for data residing on the mainframe. Those requests can be generated from several software packages using Digital Standard Relational Interfaces such as VAX Datatrieve and VAX Relational Data Base/VMS applications. Vida passes the query to the mainframe through the DECnet/SNA Gateway to IBM's Systems Network Architecture.

Once in the IBM mainframe, the query is routed to the Information Database (IDB) component of ICMS where all files that can be downloaded to the VAX system are cataloged. IDB locates the data and transfers it to the Vida package, which automatically reformats it

See **Vida** page 34

▶ PC NETS

Avatar low-end net out

BY JIM BROWN
New Products Editor

NEWTON, Mass. — Avatar Technologies, Inc. announced last week it had acquired Matrix Communications, Inc. of Marblehead, Mass., for an undisclosed sum and will market an entry-level, low-cost personal computer local-area network developed by Matrix.

The Avatar Alliance network will support up to 20 IBM Personal Computers and peripherals such as printers, modems or disk drives. At the hub of the star configured Alliance network is a programmable cluster controller that comes standard with eight ports.

Expansion boards in eight- or four-port versions can be added to create a network of up to 20 RS-232- and RS-432-compatible devices. Devices attach to the controller via modular telephone-type wiring with RJ45 or 25-pin connectors.

The product is being positioned as an entry-level offering in what many analysts call a brisk local-area network market. Alliance will be marketed to small- to medium-sized businesses, educational institutions and government agencies.

The cluster controller is outfitted with a Hitachi 64180 central processing unit driven by proprietary Avatar software residing in 8K of electrically erasable programmable read-only memory.

Interconnected devices operate asynchronously at speeds up to 115K bit/sec over distances of up to 500 feet from the controller. The network supports file sharing between personal computers, peripheral sharing and printer spooling.

A typical eight-port Alliance network will cost around $2,000 and will be distributed by Avatar directly or through value-added resellers and private label products sold under original equipment manufacturer argeements.

Avatar also announced it had installed Matrix co-founders Michelle Leah Doyle and James Sturtevant as vice-presidents in charge of overseeing Avatar's local-area network projects.

Nebraska from **page 2**

Simpson said the deregulation plan leaves the PSC too little time to examine a rate increase. In addition, he complained that his staff is too small to investigate a new proposal by the local operating company thoroughly: "If the BOC asked for a 100% rate increase, we probably couldn't do anything about it."

"It is as if [the BOC] is opening a grocery store and having a guarantee there will be no competition," said John Burvainis, staff accountant for the PSC. "The Nebraska ruling said no company can build facilities in the local exchange areas currently being serviced. So we have a situation where no competition is allowed in and there is little regulation."

Members of the Nebraska PSC said the bill drew surprisingly little criticism from the business community, even though the deregulation issue attracted a lot of attention in the general press. State communications managers interviewed by *Network World* seemed unfazed by the bill's passage. Most said they expected deregulation to have little impact on their networks. In fact, because deregulation is perceived as a pro-business effort, many users said they believed deregulation would attract other companies to Nebraska.

John Edloff, communications manager at the Omaha, Neb.-based Conagra, Inc., said he expects to see little change in his network except for some possible alterations in AT&T Wats or Message Toll Service pricing. He said he believed that most users will benefit from the local carrier pricing competition created by deregulation.

"The state has to be competitive to keep and attract business," Edloff said. "Public service commissions are usually conservative. They think if we deregulate we will be unable to afford service. I think that is a separate issue. But depending on which side of the fence you are on, that argument can be very effective."

Both the PSC and the office of the Nebraska attorney general have said they will appeal the bill on the grounds it overrides PSC responsibilities protected by the state's constitution.

Tom Stevins, Federal Communications Commission deputy chief in the Office of Plans and Policy, said the brief time period stipulated in the bill for complaint against rate hikes may be part of an effort to direct PSC regulatory efforts to businesses other than the telephone companies.

He agreed that it would be difficult for the PSC to mobilize itself in the event of a large rate increase. But he added that because the Nebraska bill was a model for other states' deregulation efforts, U.S. West Co. would be unlikely to engage in price gouging and compromise attempts elsewhere.

"It would be embarrassing for a local operating company to raise the rates of private line services much higher than the federal rates on file at the FCC," he said.

Next week: Illinois tackles deregulation.

NCR from **page 1**

ety of sources. The NCR 5660, which is compatible with the IBM device, supports 16M bytes of storage and 1,024 ports and can be attached to eight mainframes concurrently. The IBM offering is capable of supplying 2M bytes of storage, 416 ports and support for as many as six concurrently attached mainframes.

The NCR 5660, which is based on a new internal front-end processor architecture, will join the company's current top-of-the-line offering, the NCR 3690.

The company is also expected to announce a new release of Comten Open System, software that works with IBM's Vtam to route data through a network. The current version of COS, Release 2, does not support Vtam 3.1, the latest IBM release. Vtam 3.1 was announced in September 1984 and included Extended Network Addressing (ENA), which enables System Network Architecture nets to support eight million logical units. The latest COS release should support ENA and will be out in a few months.

NCR's behemoth of a front end, which will be priced between $400,000 and $2 million, will have a T-1 option that features an integral T-1 multiplexer. The interface will not be able to support direct T-1 attachments but will be able to accept T-1 data streams divided into 250K byte/sec segments. IBM's offering also has an optional T-1 interface that supports the same type of configuration.

According to analysts, NCR's product is designed for companies with very large IBM SNA networks that would otherwise require multiple IBM 3725s. The NCR 5660 could supply these companies with a number of benefits analysts say.

First, the companies could save expensive computer room real estate. Many users house their front-end processors and mainframes in one area. As corporate networks have expanded, some companies have run out of space. Companies would be able to replace two IBM 3725s with one NCR 5660 and free up a great deal of floor space.

Fewer cross-connections can also translate into improved performance, according to V. David Passmore, group manager of the network architecture and protocol group at Network Strategies, Inc., a Fairfax, Va. consulting firm. Since there are fewer routing options available, less time would be needed for a front end to determine how an SNA session should be routed.

There is a drawback to working with such a large front-end processor. Most companies that require such a device must keep their network operating at all times. But the only device capable of backing up an NCR 5660 is another 5660. Companies may not be able to justify investment in two of the devices.

NCR plans to ship the product in the next few months. AT&T Long Lines in Oakton, Va., is readying for installation of the product and will act as one beta site. An NCR employee told *Network World* that all of the approximately 45 NCR 5660s scheduled to be manufactured by the end of the year have been sold. Among the companies that have ordered the front end are US West Co., Martin Marietta Data Systems, Inc., Bell of Pennsylvania and BellSouth Corp.

Despite the device's impressive capabilities, NCR may find it difficult to woo IBM 3725 users away from IBM, according to Passmore. Companies that require the device have made a substantial investment in IBM hardware and software and may not be willing to buy anything that is not true Blue.

Fiber from **page 7**

use. Coherent systems have been tested at 200 km to 300 km unrepeated.

Receiver sensitivity is increased by combining an oscillating laser at the receiving end with the detecting diodes typically used. This laser mixes with the incoming signal before it reaches the diode, making it possible to detect multiple incoming light signals.

Coherent communications couples this receiver technology with one of three electrical signal modulation techniques now being applied to light: amplitude shift keying, frequency shift keying and phase shift keying. The receiving station becomes like a TV or radio, capable of tuning in a number of channels, Cheung explained.

Essentially, a different color of light is used for each channel. "The job of the receiving laser is to try to sort out the different colors coming in simultaneously," Cheung said.

Strides made last year in the technology make Cheung believe it is time to examine how to use coherent communications. "Although it is too early to conclude how coherent technology could best be used, we should probably rethink the topology of the network to take full advantage of this new technology."

Disoss from **page 1**

nounced in 1980.

Disoss supplies document storage and retrieval functions and runs as a CICS application on an IBM mainframe with IBM's MVS operating system. Users do not directly access Disoss services or create Disoss documents. Rather, they use a hodgepodge of application programs to create documents that conform to Disoss standards.

Through the application programs, they invoke Disoss capabilities, such as routing and retrieving documents. "Disoss can be thought of as a post office," noted L. David Passmore, group manager at Network Strategies, Inc., a Fairfax, Va. consulting firm. "Messages come into Disoss and it makes sure they reach the proper address."

IBM application programs that support Disoss include the Personal Services and Displaywrite series. These applications include conversion facilities that massage documents so they can be used by Disoss. The process is similar to taking spreadsheet data created by Lotus Development Corp.'s 1-2-3, running it through a data interchange format conversion facility and then using it in another application.

Disoss requires two types of conversion routines. One, Document Interchange Architecture (DIA), defines data structures and protocols for document transfers.

Another facility, Document Content Architecture (DCA), formats the information contained in the envelope and describes the data streams that can be used to represent documents. DCA supplies two types of data streams. Revisable form enables a document created on one system to be changed on a second system. Documents in final form may only be displayed or printed by other users.

Disoss was designed to store backup files on an IBM 8100. As office automation became a buzzword, IBM searched its product line for a package that could archive, transmit and receive text documents. In 1982, IBM decided that Disoss was that product and decreed it a strategic product.

Since that time, IBM has slowly

See **Disoss** page 35

Vida from **page 33**

and directs it into VAX Rdb/VMS and VAX DBMS data bases or VAX RMS files.

Vida, which costs between $3,500 and $35,000 based on VAX system configurations, directly accesses Cullinet's IDMS/R relational data base management system and IBM Vsam files residing on the IBM host. It also can access IBM IMS, DL/1 and Cincom Systems, Inc.'s Total files that have been stored in IDB.

Vida, according to DEC Project Manager Al Davis, is being beta-tested at six locations. Beta users reportedly are asking DEC to add uploading capabilities and compatibility with other operating systems to the product.

"We understand the need to expand to other operating systems and provide an uploading feature," Davis said.

ICMS's open architecture will support uploading, according to Cullinet Information Center Product Manager Jack Armstrong. The ICMS package costs $75,000 to install in IBM mainframes with Cullinet's IDMS/R software and $150,000 for mainframes without IDMS/R.

Cullinet markets ICMS to users that want to provide microcomputer, minicomputer and non-IBM mainframe access to data and files residing on IBM mainframes.

Cullinet introduced ICMS at the same time it announced its micro-to-mainframe link, Infogate, in 1985. Infogate provides a mainframe link for a variety of widely used personal computer applications, including Lotus Development Corp.'s 1-2-3 and Symphony packages.

Disoss from **page 34**

supported Disoss on a number of processors, including the IBM 370 series mainframes, Displaywriter, Personal Computer, System/36 and System/38.

Competitors have also picked up the Disoss baton. Digital Equipment Corp., Data General Corp., Tandem Computers, Inc. and Hewlett-Packard Co. have announced products to support Disoss.

Despite the attention being given to Disoss, users are not completely happy with its performance or its capabilities. A chief complaint is that Disoss is a memory hog requiring a great deal of mainframe storage.

Because Disoss consists of a variety of products spread over a number of different systems, inconsistencies have cropped up. The keyboard and interfaces a user works with differ on each system that supports Disoss.

Also, transferring data can be difficult. For example, the System/36 can work with only final form documents. A document created on the machine cannot be modified by another user even if that person is also a System/36 user. Transferring data to different applications — for example, from an IBM IMS data base to a second application — can be equally difficult.

Each processor that uses Disoss creates its own directory of documents. If a user wants to access a document on another system, he must know the file's name and where it was created.

Some companies have successfully implemented the product. Ronald Elswick, director of end-user computing at the 11th Federal Reserve District in Dallas, said that all managers in the district work with the product. The organization's network uses 55 departmental systems in six locations to connect more than 400 Disoss users. Despite the widespread use of the product, Disoss consumes less than 1% of the agency's mainframe resources.

"Many companies think Disoss is a cure-all that can be used to translate data," he said. "Disoss should be used only to transfer documents. Word processing systems should be used to send and revise word processing documents. Our net result is that we don't run into the problems that other companies have encountered."

TOP from **page 1**

group on the issue of network standards. One set of network users wants the 802.5 standard to be added to the next TOP specification. A second group believes Ethernet should remain the only network standard in the TOP plan.

Art Miller, chairman of the Physical Access subcommittee, said both users and vendor members of the subcommittee will be asked to vote on whether the token-passing ring standard should be added to the next version of the TOP specification. Miller said the balloting would take place sometime between six months and a year from now. Miller's group handles the physical and media access layers of the TOP specification.

Miller claimed the subcommittee's efforts were not requested by users or vendors. "What we have done is to make sure vendors of 802.5 products know what our requirements are for including a network to the TOP specification."

Adding the 802.5 local net standard to the TOP specification could cause as many problems as it would solve. Giving users a choice of network media could create a situation in which the company's facilities staff prefers one type of media, while network planners opt for the other.

Miller explained, "There is a group of users that say they have enough networks, bridges and gateways to worry about already. They say Ethernet is already an established local-area network." This group doesn't want the token ring standard added to the TOP specification, he said. Another group of users say they want to go with the token-ring specification because they know it will be supported by IBM over the long term, Miller added.

Laurie Bride, advanced data communications manager for Boeing Computer Services, explained, "IBM is a very large force in the networking market. If it is going to support the token ring, it is a good strategic move to allow the token ring as an option in the TOP specification."

Six months ago, at the behest of General Motors Corp.'s MAP manager Mike Kaminiski, representatives from Boeing approached IBM to discuss creating an internetworking demonstration. Boeing has supported the TOP effort for over two years. Touch Communications, Inc.'s internetworking demonstration later this week at the U.S. MAP/TOP users group meeting in Seattle is an outgrowth of that effort (see "Touch demos Ethernet" on page 2). Bride said Boeing wanted to demonstrate that TOP protocols could be used on a token-ring network. "We needed to show that it was feasible to run TOP protocols on IBM's Token-Ring Network so users would understand that they can have an alternative to Ethernet," she explained.

Bride said TOP's Physical Access subcommittee has already established criteria for reviewing any proposed additions to the bottom two layers of the TOP specification. "We want to be very cautious about expanding the specification in this area." Bride said the criteria encompass the following:

- The proposed media addition must be a standard.
- There must be multivendor implementations of this standard.
- There has to be demonstrated interoperability between these multivendor implementations of the standard.
- The standard must be ratified by the TOP users group.
- A proposed local-area network must be able to be connected to an IEEE 802.3 network via a network bridge device.

Private lines from **page 1**

in order to exploit lower intrastate charges.

For example, a company with multiple circuits running between California and Massachusetts could take advantage of the low California intrastate tariffs by containing circuits within that state and connecting to Massachusetts through one digital link.

Because state tariffs differ, however, interstate rates are sometimes cheaper than intrastate rates. A company with many network drops in New York state, for example, may reverse the technique, making its intrastate network appear to be an interstate network.

According to Federal Communications Commission postdivestiture regulations, a communications facility connected to another facility or switch that forwards data across a state line is considered contaminated and subject to interstate tariffs. However, according to Kozicki, connecting circuits within a state to a processor housed in the same state enables the user to take advantage of intrastate tariffs.

"When you have a significant network population in a given Lata, you almost always save money by staying Lata pure," Kozicki said.

Where interstate tariffs are lower, Kozicki maintained it is possible for a user to take the opposite tack and argue that, despite the fact that in-state lines are connected to a single processor, they are contaminated and subject to the lower interstate tariff.

In addition to the savings that can be realized in some instances by creating "state pure" networks and taking advantage of intrastate tariffs, it is possible to reduce costs by keeping as many lines as possible within Lata boundaries.

Although there are no hard and fast rules that dictate the savings that can be realized with individual network configurations, creating state and Lata pure networks or subnetworks can usually save users a significant amount of money.

The key to savings is determining how best to optimize your network to take advantage of local exchange bridging, special access tariffs and differences in local and long-distance rates.

Many companies have sprung up since the divestiture of AT&T that offer computer-based services and products aimed at helping users capitalize on private-line tariff options. Contel Network Management offers a software system called Mind-Data. Users of the system have realized significant savings by designing their networks in a way that takes advantage of these techniques. One company, a nationwide retailer, saved a six-figure sum using the Mind-Data system.

Companies whose networks were engineered prior to the AT&T divestiture may be owed a good deal of money as a result of postdivestiture tariffs involving local exchange carrier bridging of multipoint private lines. Kozicki estimates AT&T may owe as much as $20 million to companies whose private lines are bridged at local exchange carriers but are being billed as if they were bridged at AT&T's point of presence.

Local nets from **page 2**

to an Ethernet system to communicate and exchange files with personal computers on the Token Ring.

"We are writing all our software to support several different vendors at the network interface," McGann explained. At present, the Touch Communications software works with IBM Personal Computer controller boards manufactured by IBM, Texas Instruments, Ungermann-Bass, Inc. and Sun Microsystems, Inc., he claimed.

During next week's MAP/TOP user meeting demonstration, a single IBM Personal Computer AT equipped with Touch Communications software will act as a router between an Ethernet system and a Token-Ring Network, McGann explained. The internetwork router has the intelligence to determine when to send information from one network to the other, he said.

McGann explained that the Personal Computer AT router has the capability to resolve differences between the Ethernet's 10M bit/sec operating speed and the Token-Ring Network's 4M bit/sec operating speed. "There is an inherent store-and-forward capability in the router," he explained. "If you are, for example, sending data from the Token-Ring to the Ethernet, packets are brought off the Token-Ring and stored in a receive queue on the router, which acts as a buffer. The packets are then sent to the Ethernet." The transport level of the Touch Communications software has an automatic speed matching feature, he claimed.

The demonstration will also feature a Sun Microsystems, Inc. workstation and a pair of IBM Personal Computer ATs hooked to the Ethernet. One of the Personal Computer ATs will use software developed by Boeing Computer Services and Industrial Networking, Inc. to link to the Ethernet system. The second Personal Computer AT will use the Touch Communications software to access the Ethernet.

A second pair of IBM Personal Computer ATs will be connected to the Token-Ring Network. One AT will be linked to the ring via a Texas Instruments network adaptor card, and the second will be hooked to the IBM net with a standard IBM Token-Ring Network adaptor card.

The Yankee Group's Gordon said Touch Communications' software may be ahead of its time. "This is certainly a product that will be viable in the future. It is difficult to see where the market for the product is now," he said.

Gordon said Digital Equipment Corp.'s efforts to enhance its products to support OSI could act as a catalyst for wider use of the Touch Communications software.

Calendar

May 12-13, Chicago — Networking, Protocols and Compatibility. Also, May 22-23, New York; June 16-17, San Francisco; July 28-29, Washington, D.C.; Aug. 7-8, New York. Contact: Datapro Research Corp., 1805 Underwood Blvd., Delran, N.J. 08075.

May 13, Minneapolis — Integrating Network Protocols. Also, May 23, King of Prussia, Pa.; June 12, Cherry Hill, N.J. Contact: Sandy Harper, Seminar Coordinator, Infotron Systems Corp., Cherry Hill Industrial Center-9, Cherry Hill, N.J. 08003-1688.

May 14, New York — Advanced Lotus 1-2-3. Also, May 22 and 28, New York. Contact: Productivity Center, 450 7th Ave., Suite 402, New York, N.Y. 10123.

May 14-16, Chicago — The Information Center 1986 and Beyond. Contact: Information Processing Associates, 1455 Poplar Ave., Suite 210, Memphis, Tenn. 38104.

May 15, New York — Symphony Data Base. Contact: Productivity Center, 450 7th Ave., Suite 402, New York, N.Y. 10123.

May 15-16, Washington, D.C. — Computer III: Establishing a Regulatory Framework. Contact: Phillips Publishing, Inc., 7811 Montrose Road, Potomac, Md. 20854.

May 19-21, Washington, D.C. — Effective Use of the IBM PC XT/AT. Contact: Conference Management Department, The Institute for Advanced Computer Education, 3233 K St. N.W., Washington, D.C. 20007.

May 19-21, Washington, D.C. — MEDCOM '86: Health Care Telecommunications & Revenue Opportunities. Contact: Seminar Department, TeleStrategies, 1355 Beverly Road, McLean, Va.

May 19-22, Philadelphia — 1986 SME International Tool & Manufacturing Engineering Conference and Exposition. Contact: Society of Manufacturing Engineers, One SME Drive, P.O. Box 930, Dearborn, Mich. 48121.

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HORRELLSCOPES

BY EDWARD HORRELL

In communications today, it takes more than just good business sense to survive: It takes celestial guidance.

Leo: The Internal Revenue Service in Washington, D.C. is roaring mad over its turkey private branch exchange system.

Horrellscopes has learned via the grapevine — which is about the only way it's possible to communicate with the IRS in Washington, D.C. these days — that the tax collectors are having an incredible problem with their new PBX system, the CXC Rose.

And in the middle of tax season, too. Although we can all thank our lucky stars that this problem didn't happen to us, it could have.

CXC is a highly touted new high-tech PBX company. But one operating company is apparently worried about its future as a Southern bell-ringer for CXC. Because of the problems in the capital, this major distributor has put a moratorium on selling the product until the problems can be traced and corrected.

Users ought to learn from the IRS and be careful about buying start-up products, especially if they buy them just to be part of the technological revolution. Those who lead revolutions sometimes get shot out of the sky.

Before taking a flier on a brand new product, users should ask themselves: Is it worth the risk? Does my company have disaster plans for telecommunications? Is my job secure enough to handle a start-up disaster?

Sagittarius: The archer is a reminder that users ought to be on guard against telecommunications disasters.

The IRS mess is fair warning to telecommunications managers: Every day you go to work without a disaster recovery plan, you hang your job out in space.

Most users are completely dependent on their vendors to restore service. But somebody in your company better be addressing the practical questions such as, "Do you have the money to restore immediate communications?" or "Who in the company should get service restored first?" or "How much time do we have to restore service before disaster slides into catastrophe?"

Gemini: Northern Telecom has many sets of twins (or even triplets and quadruplets) presenting its SL PBX family to the public.

The big Canadian vendor is setting a rocketing pace in the voice/data integration field. But Northern Telecom's practice of having numerous distributors vying to sell its products in a given area has made it confusing for users who are trying to select a PBX. Do they buy the cheapest? Do they bet on the biggest distributor? Which one does Northern Telecom endorse?

Generally speaking, large planets don't have many moons around them. Northern Telecom is a huge planet, and it is wasting its cosmic energy by having so many distributors in orbit.

Horrellscope tip to Northern Telecom: Get exclusive distributors, especially for your excellent DV-1 system.

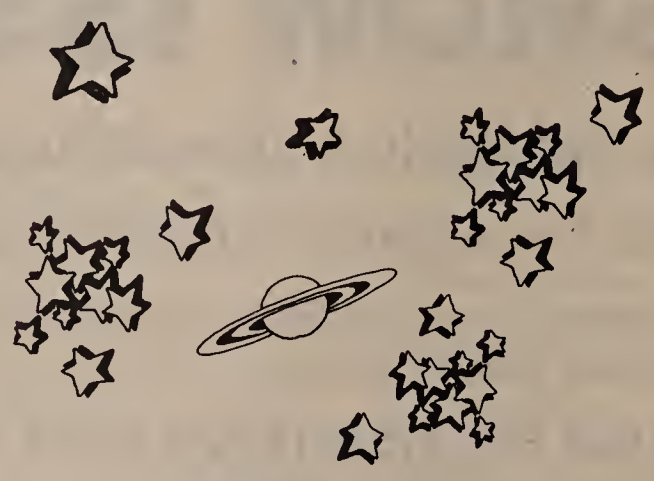
Libra: The company that needs to regain its balance these days is Intecom, maker of PBX systems.

A free-spending jury recently awarded $37.5 million in damages from Intecom to American Network Services, Inc. for some performance failures on the Amnet network — among other things.

Streaking on the tail of that news was the report that Wang, one of Intecom's major investors, had purchased a substantial interest in another PBX manufacturer, Telenova, Inc. True, Telenova makes a smaller switch than Intecom, but it makes a stargazer wonder which company is Wang's favorite.

So this hasn't been a good time for Intecom. Its planets haven't been properly aligned.

But the outlook for this comet is not doom. The stars indicate that Intecom will continue to be a leading contender. All the company needs is a word of encouragement and a course adjustment.



Cosmic catastrophe of the month

In the race to be just one of the boys, IBM is the last company one would expect to find. But Big Blue's latest star, following the trajectory of several other companies, is falling straight toward your lap.

IBM has introduced a lap-top personal computer, the PC convertible. That's bad enough because a lap-top computer is only useful three times: while driving a car, while flying in a plane and while seated in the bathroom. But IBM compounds the catastrophe by having its lap-top use the small diskette, thereby making it incompatible with the popular personal computers in the field today.

The lap-top was born under the sign of Aries, which indicates that someone thought out the profit and loss margins carefully.

That proves even astrology and IBM can err.

Virgo: Changes in the energy industry show that telecommunications could be a real sister to another industry.

With deregulation, the energy companies are starting to go through changes similar to those experienced by telecommunications companies years ago.

Users are cruising at their own speed, picking alternate sources of energy — and enjoying the freedom. Because of this, power companies are taking a close look at the stars in our industry.

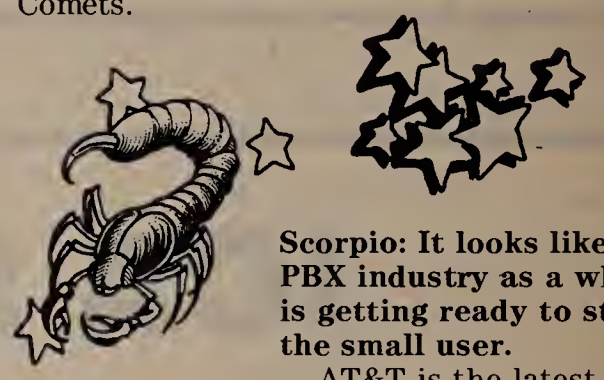
If they are good sisters, telecommunications and energy would share information and experience.

But what sisters would share men?

Power companies are starting to recruit former telephone company employees who have been through the deregulatory changes.

One is Ken Breeden, former AT&T executive and now vice-president of marketing with Arkansas Power & Light. He says the energy is now in the hands of entrepreneurs.

And we know what those folks are like: Comets.



Scorpio: It looks like the PBX industry as a whole is getting ready to sting the small user.

AT&T is the latest to take a stab at the small PBX market. Their new product, the System/25, will be introduced soon. And another, even smaller PBX, code-named Excalibur, is being readied for the market.

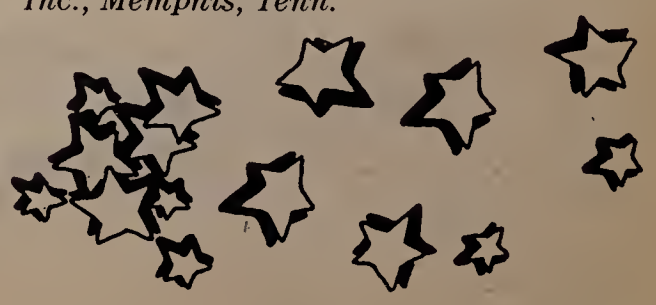
Profiteers have identified the small-system market as the next planet to explore. Emphasis will be placed on the smaller, less sophisticated user.

The question every user should ask is, "Will this system grow as I grow?"

The single biggest mistake in buying systems today is choosing one that is too small and can't be expanded.

What this industry really needs is a vendor willing to come to the party with a system that is truly modular and priced for the small but growing business. Such a reveler would not go home alone.

Horrell is president of Mitchell & Horrell, Inc., Memphis, Tenn.



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